VATLY NEWSLETTER

Nearly ten years ago, we started the Newsletter with a quotation of a few words from the resolutions of the 7th Plenum of the Vietnamese Communist Party, hoping that they would become more than words. It is interesting to recall them today: *"...In the present conjuncture, young Vietnamese have to face many difficulties... Before year 2020 we must build a Vietnamese youth... proud of their country... mastering perfectly the last advances in science and technology... It has become necessary to develop the Vietnamese contingent of intellectuals both qualitatively and quantitatively and to raise their level of knowledge and education to that of developed countries... we must do our utmost for them to enjoy improved material and cultural working conditions, we must warrant for them material benefits matching their talents".*

Nong Duc Manh, July 17th 2008

We wish our friends a very happy and successful New Year of the Dog!

CONTENT

This twenty-seventh issue of the ***VATLY NEWSLETTER*** opens with the traditional ***NEWS FROM THE LABORATORY***, followed by ***BEST WISHES FOR THE NEW YEAR*** that Pierre and Diep presented to the Tia Sang editorial team and comments ***ON NEW ASTRONOMY INSTRUMENTS*** that they make in the context of the recent completion of the Nha Trang and Hoa Lac Observatories. Next, Diep comments on ***COLLABORATING WITH USTH*** and Phuong on ***A RECENT VISIT OF ANNE DUTREY AND EDWIGE CHAPILLON***. Then come a series of reports on meetings and conferences: ***SEAAN MEETINGS IN CHIANG MAI AND MANDALAY*** (Diep), ***EAO MEETING IN SEOUL*** (Diep), ***ASTRONOMY SCHOOL IN CHIANG MAI*** (Thai), ***EAYAM MEETING IN JAPAN*** (Hoai) and ***H&H2017 MEETING IN MANDALAY*** (Loc). Last, Tuan Anh and Hoai recorded ***AN INTERVIEW FROM NGHIEM VU KHAI, DEPUTY DIRECTOR OF VUSTA***, the Viet Nam Union of Science and Technology Associations. The issue closes with the traditional ***PHOTO ALBUM***.

NEWS FROM THE LABORATORY

Under this heading we review briefly the progress of the work of the team and the main events in its life.

The past six months have seen progress on our analyses of stellar physics observations with two new publications in RAA, one on protostar GG Tau with our Bordeaux collaborators and Phuong as first author, and one on AGB star EP Aqr with our Paris/Grenoble collaborators and Nhung as first author. Moreover, Hoai has been working on a radiative transfer description of the EP Aqr data and Pierre and Nhung on a general paper on the de-projection of radio observations of axi-symmetric expanding circumstellar envelopes of evolved stars, both papers currently nearing completion. Phuong and Diep have progressed with the work on protostars in collaboration with the Bordeaux team, which Phuong joined after Têt for her four month yearly stay in the framework of the joint supervision agreement for her PhD degree. Tuan Anh has been making essential contributions to the reduction and merging of EP Aqr ALMA data, which turned out to be more difficult than expected. We are still looking for possible collaborations on high redshift galaxies, which would make it possible for us to access observations other than archival; Pierre has been contacting Pierre Cox and colleagues of him in this context. Thai is actively learning astrophysics and gives us periodic presentations aimed at monitoring her progress.

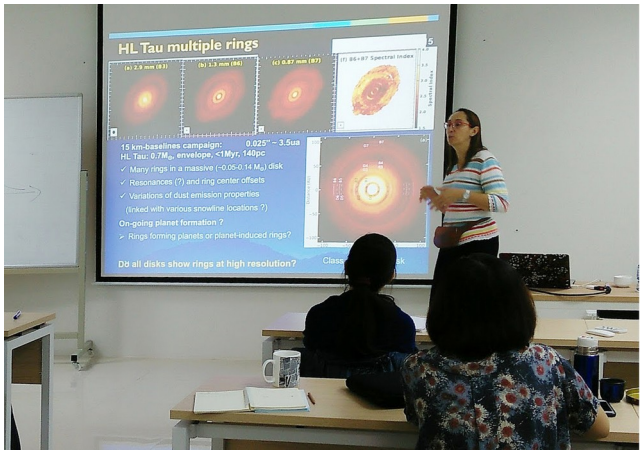
Thao came back with us after Têt, at the end of her maternity leave, and will be busy

working on the Hoa Lac telescope together with a newcomer in the group, Pham Vu Loc. Loc just got a master in material sciences from Hanoi University of Science and Technology and is a long-date amateur astronomer, with a strong interest in the history of astronomy in Asia. He and Diep take care of the astronomy section of a monthly magazine, Pi Magazine, which Ngo Bao Chau has been founding. Phan Thanh Phuc, who spent some time with us with the idea to work on the Hoa Lac telescope, finally decided to join a private Korean company, with a much more generous salary than what VNSC can offer…

The walls of our office have been enriched with two recent additions: pictures of the three LIGO Nobel laureates, adding to the collection, and a big poster of Bac Ho, dressed as Uncle Sam, and urging young Viet Kieu scientists to come back to the country and work with us on promoting Vietnamese science.

We took part in the usual lot of meetings and conferences in South East Asia: in November, Hoai and Phuong attended the East Asian Young Astronomers (EAYA) meeting in Japan where Hoai presented the work on evolved stars and Phuong the work on GG Tau. Diep attended the 9th South East Asia Astronomer Network (SEAAN) in Mandalay, together with Loc who gave a presentation on Vietnamese calendar history to the audience of an IAU History and Heritage meeting. Diep took part in a meeting of a SEAAN working group in Chiang Mai (Thailand) with the mission to amend the organisation's charter; he also attended the James Clerk Maxwell Telescope (JCMT) users meeting in Seoul, where we are now welcome to submit proposals.

The whole team will be in Quy Nhon in July to attend and help with the organization of the conference on "*Cosmic cycle of dust and gas in the Galaxy: from old to young stars*", which Anne and Diep are organizing. The conference will be preceded by a two day workshop for senior students and young postdocs and followed by a training session in Nha Trang at the end of the month.



Anne lecturing at VNSC

In November, young Vietnamese PhD students from USTH currently working in France took the initiative of convening what they called a "Vietnam astronomy meeting" which was followed by Skype by their young colleagues across the world and to which Phuong and Diep took part.

In January, VNSC welcomed a large Japanese delegation, who presented a proposal for *Vietnam's Long Term Master Plan for Earth Observation using Satellites*. We all attended. The idea was to recommend and propose to the Vietnamese Government a long term road map of remote sensing system for Viet Nam up to 2040. We heard very interesting presentations but it is not clear what the follow-up will be.

In November, Pierre Lesaffre stayed with us for ten days during which, together with Diep, he gave lectures to Master 2 USTH students.

In December, Anne Dutrey, from Bordeaux, and Edwige Chapillon, from the Institut de radioastronomie millimétrique in Grenoble (IRAM), spent some time with us in the framework of our collaboration. Edwige gave a seminar on the NOrthern Extended Millimeter Array (NOEMA, the upgraded Plateau de Bure Interferometer) and Anne gave a lecture on ALMA observations of protostellar discs. Like last year, Anne has been submitting a grant application to the French Embassy in Hanoi in the hope to obtain some financial support for exchanges between Hanoi and Bordeaux in the framework of the very fruitful collaboration that we are maintaining and, like last year, we just learned that it has not been retained. It is very disappointing.

Prof. Lucio Picirillo with the trainees in Hoa Lac

In February Hoang Chi Thiem, who spent several years in Canada and is currently working in KASI, spent a few days with us and gave lectures on dust alignment and magnetic fields in interstellar matter.

Alain Maestrini gave lectures to Master 1 USTH students on antennas and telecommunications; Diep joined him to take care of an 8 hour practice course using the small 2.6 m radio telescope. We had a nice lunch with Alain, his wife and their young daughter Anne-Vy in a restaurant near the West Lake.

Both optical telescopes in Nha Trang and Hoa Lac are now installed. Diep went to Nha Trang in October, together with Loc, to train the Vietnam team preparing for the 11th International Olympiad on Astronomy and Astrophysics; they have been awarded two silver medals and two honourable mentions. In January a training session was organised by Lucio Picirillo in Hanoi and Hoa Lac, for both telescope and planetarium, we report about it elsewhere in the letter. Lucio also presented ideas of his on a new radio telescope project, which Diep and Pierre comment on below.

The team had opportunities to attend seminars from USTH students and lecturers and reports from the last contingent of VNSC students having made a master in Japan and having returned home.

Hoai and the jury members after the Vietnamese defence of her PhD thesis

On October 28th, Hoai had finally the chance to present the Vietnamese official defence of her PhD thesis, which she did superbly. The whole team also attended the presentations of Ngo Hai Tan's PhD thesis on the nuclear physics of neutron stars. Diep and Nhung were members of the jury. Tan's supervisor, Dao Tien Khoa, who gave an excellent seminar at the Institute of Nuclear Science and Technology on this subject, is keeping this research alive and Tan will now join the Institute of Physics where she will be able to continue working in the same field.

In the series of VNSC seminars, on the occasion of Women's day, a lady biologist gave a speech that was followed by a round table discussion on the role of women in science to which Diep took part.

At the end of September, we enjoyed the visit of Professor Sun Kun Oh from Seoul, whom Pierre knows from the Erice Seminars on Planetary Emergencies. He is a particle physicist, member of the Alice collaboration on LHC, professor at Konkuk University, and member of the Bureau of the Global Science Forum.

A young lady, Thu Hang, contacted us because she was planning to shoot a movie using science in general and astronomy in particular as a source of metaphors for more philosophical issues. We enjoyed discussion with her, but she has now changed her mind and is planning to join the Vietnamese University of Fine Arts this Summer. Another young lady, Thuy-Han, living in Bavaria, was introduced to us by Ngo Bao Chau who invited Diep and Pierre for a dinner with her in December; her interest was also to hear from us in connection with a movie that she is shooting.

Sun Kun Oh and Pierre, with Bac Ho in the background.

Teacher's day was the opportunity for Pierre to welcome the visit of old friends, such as Thieu and Dong, and to receive news from Hiep, who is now completing his PhD work in Australia on hidden gas in the Galaxy (i.e. gas that is not readily detected from HI and CO emissions), and from The, who has given birth to a beautiful boy, Phan Quang Bao, on Vietnam Independence Day.

Bac Pierre has kept actively writing articles for Tia Sang. He and Diep were invited by the editorial staff for a Têt get-together party where they gave a short speech on freedom of expression; we copy it elsewhere in the letter. They also had a chance to meet the Deputy-Minister of the Ministry of Science and Technology (MOST), Professor Pham Cong Tac, whom they delivered a similar message. As usual on such occasions, the message was very well received, but probably forgotten as soon as they had left the room… Bac Pierre also attended a conference given by the Institute of Mathematics in the honour of Hoang Tuy's 90th birthday. He had been invited to join the Advisory Board of the Vietnam Young Academy, which is dominated by Viet Kieu membership. After having met the president of VAST, he understood that there would be no support from the country to encourage an increased domestic membership and he preferred to decline the invitation. He wrote an article in Tia Sang on this issue. In February, he went to CERN where he gave the opening speech on the occasion of the Alumni day.

On November 11th, the very same date as Tuan Anh's own birthday, Tuan Anh's wife gave birth to a strong boy, Pham Thanh Tung, bringing the contingent of the young VATLY generation to five members. Welcome to the gang!

Celebrating Pierre's 80th birthday at his house on February 17th

BEST WISHES FOR THE NEW YEAR

Each Têt is the occasion for Tia Sang to invite those who contribute to its redaction for a get-together party during which the guests are invited to say a few words. Bac Pierre went there with Diep and we copy below what he said, which Diep translated in Vietnamese.

Têt is the time to express our wishes for the New Year. My dearest wish this year is to see the nation progress on the way to free expression and free speech. I know a young Vietnamese scientist, doing research in Viet Nam, who recently submitted an article on Vietnamese fundamental scientific research to a magazine specialized in science and technology (it was not Tia Sang). It was an excellent article, well documented, intelligently organized and identifying clearly points that deserve some effort to achieve

improvement. The article was rejected. The reason given was that it was painting too black a picture of Vietnamese science. It is not by painting reality in pink that we shall progress. It is by having the courage to face the truth and the determination to bring light into the dark. The censor who prevents the young generation to identify openly the flaws and weaknesses that need to be fixed for the nation to progress is an enemy of the country. On the contrary, who has the courage to face the truth and the determination to progress is its friend. Gagging the young generation is castrating the nation intellectually. Inventing taboos and hiding the truth is counter-productive. Viet Nam can be proud of its past and present history and has nothing to hide. We all make mistakes some time; rather than hiding them, we need to learn from them. Wisdom is for the old age, enthusiasm is for the young age, we need both. There will be no progress in the country toward more human dignity if we keep preventing the young generation to speak out. We should not only stop doing so but even more, encourage them to speak up. The nation has to face outstandingly difficult challenges in a constantly changing world. To succeed, it needs to open its eyes and to open its mind. In 2017, Viet Nam ranked 175 in the World Press Freedom Index of Reporters without Borders, just in front of China, Syria, Turkmenistan, Eritrea and North Korea. My dearest wish this year is to see Viet Nam jump out of this rear guard and restore freedom for the young generation to identify clearly what they need to fight for in order to make the country progress on the way to intellectual and moral rigour and on the way to human dignity. I know that we can count on Tia Sang to help with such a move and, at the same time as I thank its staff for welcoming us and making us feel at home among them, I wish them to find the strength to do so.

ON NEW ASTRONOMY INSTRUMENTS

The completion of the observatories in Nha Trang and Hoa Lac, with telescopes and planetariums, is now putting pressure on VNSC to make the best possible and efficient use of the instruments. We had on this occasion very fruitful discussions with the Manchester professor responsible for their installation, Lucio Piccirillo, sharing with him what could be done if adequate support were given to astrophysics in the country. Unfortunately, in the present Vietnamese situation, we are forced to limit our ambitions to more modest goals, as Diep and Pierre are commenting below.

Recently, VNSC completed the construction of two observatories in Nha Trang and Hoa Lac (30 km from Hanoi to the west). Each observatory includes a 0.5 metre diameter Ritchey-Chrétien optical telescope and a planetarium of 50 seats in Nha Trang and 100 seats in Hoa Lac. In Hoa Lac, where the future headquarter of VNSC will be located in a few years, a space museum will be built that should open in 2020. The primary purpose of these instruments is to foster interest for astronomy and space sciences in the population, in particular for training school children and university students in these fields. It is planned that VNSC will start in June already to welcome students for training and visiting the Hoa Lac observatory.

Practising with the newly installed telescope in Hoa Lac during the training session

From January 19th to 22nd, Professor Lucio Piccirillo, from the Jodrell Bank Centre for Astrophysics at University of Manchester, who is responsible for the design and construction of Nha Trang and Hoa Lac observatories, organized a training session on the newly installed Hoa Lac telescope and planetarium for the VNSC staff. All DAP members, a colleague from Nha Trang, and some other staff from the technology division attended. A first training session had taken place in Nha Trang in summer 2017 when Nha Trang

Observatory had been technically completed. On that occasion Lucio Piccirillo had given a thorough discussion of the hardware and software of relevance to the planetarium and telescope. In this second training session, he briefly reviewed what he had presented in Nha Trang: block diagram and optical characteristics of the telescope, dome, CCD, spectrograph, and their set-ups, turn on/off procedure, operation of the dome (open/close and rotate) and telescope, telescope and CCD's control software. In the Hoa Lac training session more time could be dedicated to photometry and spectroscopy and the generation of planetarium scripts. The discussion was open between trainees and Lucio Piccirillo. In addition to providing basic information as mentioned before, considerations on how to enhance the instrument were also presented: colour photography filters, planetary telescope/camera, autoguide using fast CCD. Regarding the operation of the planetarium, topics on turn on/off, run control software VUPLA, and calibration were covered; general ideas were offered on how to tailor scripts for various audiences: small children (4-8), children (8-12), teenagers (13-17), adults (18+), special scripts for VIPs (politicians and non-experts). The trainees had time for observations in one of the nights during the period and they also had time to work with the spectrograph.

Currently, besides the focus on building a training programme using the facility in Hoa Lac, three of us (Thao, Loc and Dung) are preparing for a research programme using the telescope. They started making observations to gain familiarity and experience. They aim at being able to assess what can be realistically achieved given the constraints of weather conditions and light pollution. Some first measurements could possibly be of variable stars, both photometry and spectroscopy. A good candidate is Algol, which is in the Hanoi sky. Other observations could be of planets, in particular Jupiter, and measurement of its rotation velocity from the Doppler tilt of the molecular lines; observation of planetary nebulae, in particular NGC 6853 and measurement of their spectra, would also be possible.

Before, coming back to Vietnam for the second training session, Lucio Piccirillo had paid two visits to VNSC to propose the acquisition of a 12 m radio telescope operated at centimetre wavelengths, which would be installed in or near Da Lat. He underlined the main assets of such an instrument: an optimal science to cost ratio, an excellent training value and an important science potential. We agreed with him on all points and recognized that the acquisition of such an instrument would be an important asset in the development of astrophysics research in the country; as scientists, we fully shared his views. However, as clearly stated in our earlier reports issued in April and June 2015, the priority today is unfortunately not to acquire new instruments but to build up a community having the ability to maintain, operate and exploit such instruments. In a healthy science community, users are asking for instruments, not instruments asking for users. The priority today in the country is to invest in brains, not in instruments.

Operating the Hoa Lac telescope during the training session

This is essentially what our 2015 reports were saying. They were proposing a number of actions which, we thought, could help with building a skilled Vietnamese astrophysics community. The main recommendations were: i) support to DAP for training abroad (mostly in Asia), including schools, conferences and short visits to astrophysics research teams; ii) support to VNSC to foster new talents in modern electronics, with emphasis on millimetre wavelengths; iii) support to two or three foreign astrophysicists to travel to Ha Noi once a year and take part in the meeting of an advisory committee to be created; iv) support to fund and coordinate a network of half a dozen or so small radio telescopes used to

train students all over the country. We had then argued that, if properly implemented, these recommendations would help preparing the ground for planning the construction of a national radio telescope.

Left to right: Diep, Vinh (a lecturer at HNUE) and Pierre Lessaffre during a night observing session

Two and a half years later, our views not only have not changed but we feel stronger about them. A recent attempt Diep made for Vietnamese doctoral schools to include astrophysics in their syllabus was turned down; the task of exploiting in Nha Trang and Hoa Lac optical telescopes equipped with high quality spectrographs, planetariums and a museum underline the difficulty to bring together competent teams having the ability to exploit them, a real challenge for VNSC, which must be successfully overcome; we shall do our utmost to help with the task, but the difficulty should not be underestimated in view of the bad record of the country in this respect; we must recognize that most of our recommendations, although very standard in other countries (we had the support of several high level foreign scientists whom we had consulted when writing the reports) could not be implemented, the current culture prevailing in Vietnamese science and education failing to make them acceptable.

The current DAP staff is small and we have difficulty in recruiting brilliant young students because of the very low salary given to scientists compared with business, management, marketing, banking and other fashionable professions. Yet, we are doing top class research in astrophysics, at international level, and publish a lot in the best journals in the field; we are well recognized by our colleagues abroad; we understand very well the science and have clear ideas about what is best for us to work on; indeed, our hands are full with our current work on stellar physics and high redshift galaxies, our problem is not missing ideas; it is not missing instruments either since we are working on observations made by the best radio instruments in the world, operated at millimetre and sub-millimetre wavelengths, in particular the ALMA array, sixty-six antennas at 5'000 metres altitude in Chile.

The project that was presented by Lucio Piccirillo implies, for being properly exploited, a team of three or so PhD scientists. These people are not available on the market, it would take something like five years to build up a team having the ability to run and exploit such an antenna. Accordingly, it would be irresponsible for us to commit ourselves to such a project.

Yet, as repeatedly emphasized by our director, we must look positively at the future and be determined to progress in spite of the difficulties that we are meeting. So do we. In the present case, our attitude is therefore far from rejecting the proposal but instead, as was stated in our earlier reports, to identify the best actions that could help with paving the way toward its future implementation. However, for the time being, we cannot consider seriously the acquisition of a new instrument.

COLLABORATING WITH USTH

We are maintaining strong and friendly relations with USTH; Diep reports and comments on our collaboration.

The University of Science and Technology of Hanoi (USTH), also known as the Vietnam-France University, is one of the four so-called world class universities in Vietnam. The other three are with Germany, the United States and Japan. Since the beginning of USTH, even before it formally started on the occasion of the Ha Noi Millennium in 2010, we were already among its fellow-travellers, helping it to take off as much as we could using our modest experience with developing science in Vietnam, giving lectures and taking care of lab work (in both astrophysics and particle physics); in particular, Pierre was a member of the first advisory committee.

Currently, four of us, Tuan Anh, Nhung, Thao and I are giving lectures at USTH to bachelor and master students; we welcome students for internship with us at VNSC and we contribute to the supervision of master and PhD theses. Right now, at the end of March, one of us, Nhung, is in Paris to attend a PhD thesis defence by one of the USTH PhD students. Nhung is co-supervisor of the thesis. We contribute to lab-work together with USTH lecturers using our former cosmic ray detectors at the Institute of Nuclear Science and Technology, our small radio telescope and the 40 cm diameter optical telescope of the Hanoi University of Education.

We mostly interact with USTH through the activities of the Department of Space and Aeronautics (DSA) of which Yannick and Pham Anh Tuan are directors and in the running of which our friend Ngo Duc Thanh, with whom we maintain excellent relations and who is also Deputy Rector of USTH, plays a major role. DSA is facing difficulties with recruiting a large enough number of students and does not have full time lecturers/researchers. However, their students are very active and lively. They maintain a cycle of seminars with speakers usually chosen among the lecturers who come from France for a few days, up to two weeks, to lecture. We attend most of the seminars and the USTH DAS students attend seminars organised by us. USTH PhD students who are making their PhD abroad, mostly in French laboratories, keep close contact with the university and also among themselves. They organised the first meeting of young Vietnamese and overseas Vietnamese astronomers which took place in Paris; most of them were PhD students, a few others were master students and young postdocs. Phuong and I attended the meeting from Ha Noi via Skype. Phuong gave a presentation of her work on the proto-star system GG Tau and I spoke about our research at DAP. During the meeting, the participants presented their work and discussed possible future collaboration. They all expressed a desire to build a strong network of young Vietnamese astronomers. Many of the USTH PhD students expressed the wish to collaborate with DAP members after finishing their PhD and coming back to Vietnam. We expressed formally the wish to strengthen our collaboration with USTH, in particular by being accepted in the doctoral programme as co-supervisors of PhD theses in a co-supervision (cotutelle) agreement framework, but our offer did not receive a friendly welcome yet. We shall nevertheless keep pushing the idea with the DAS directors with the aim of establishing a more formal collaboration between USTH and the Department of AstroPhysics of VNSC.

A RECENT VISIT OF ANNE DUTREY AND EDWIGE CHAPILLON

Anne Dutrey, from Bordeaux, and Edwige Chapillon, from Grenoble, spent a week with us before Christmas. Phuong reports.

Welcoming Anne and Edwige at a dinner in a restaurant serving specialities from Hue's gastrnomy

In December, Anne Dutrey (Laboratorie d'Astrophysique de Bordeaux), co-supervisor of my thesis, and Edwige Chapillon (Institut de Radio Astronomie Millimétrique in Grenoble) spent a week with us in the framework of the collaboration between Hanoi and Bordeaux. Anne gave a lecture on the physics of proto-stellar discs and ALMA observations of such objects. Edwige gave a seminar on the NOrthern Extended Millimeter Array (NOEMA), the upgraded Plateau de Bure Interferometer. Lecture and seminar were attended not only by the DAP members but also by some undergraduate and master students from USTH and some young colleagues from VNSC.

The main purpose of the visit was to work together on ALMA observations of GG Tau emissions from ^{12}CO(3-2), ^{13}CO(3-2), C^{18}O(3-2), CS(7-6) and on IRAM interferometer observations of CS(3-2). The high angular resolution

observations of optically thin CO isotope emissions, ^{13}CO(3-2) and C^{18}O(3-2) display a radial dependence of the intensity that shows complex features that cannot be modelled by a simple power law, as commonly assumed for proto-planetary discs. We use DiskFit, a radiative transfer code developed by the Bordeaux team, to model the GG Tau ring. With different CO isotopes, we are able to determine the CO surface density as well as the disc's kinematic temperature. We are also able to identify different molecular layers in the disc. C^{18}O(3-2) and CS(7-6) emissions reveal the very high density of the ring. We are now completing the analysis of the ring data and start working on the cavity in the centre of the disk. Using the modelled ring emission, we subtract its contribution and retain only the emission inside the cavity. We hope to be able to identify clumps inside the cavity for which we could estimate the excitation conditions.

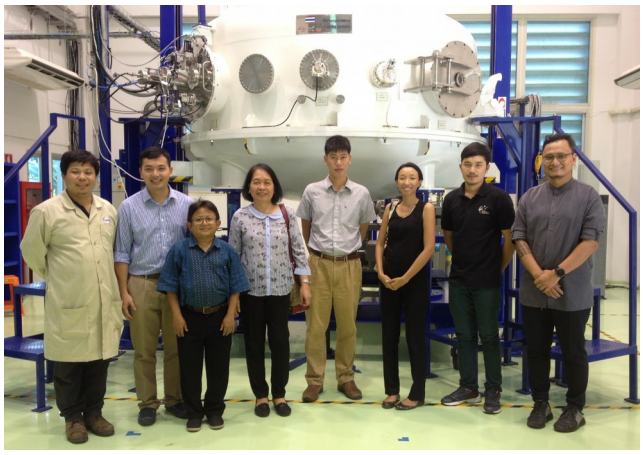
In front of Bich Dong (Green Pearl Grotto) in Ninh Binh

NOEMA will double the number of antennas of its predecessor from six to twelve. Construction of the array will continue, with the addition of approximately one antenna each year until 2019. The NOEMA receiver will reach higher frequencies (4 bands: 72-116 GHz, 127-179 GHz, 200-276 GHz, 275 -373 GHz). The correlator will also be upgraded from 4 GHz bandwidth (2 GHz in each side band) in single polarization to 32 GHz coverage – 2 polarizations and 8 GHz in each side band. Currently, NOEMA has nine antennas on track with new receivers and the upgraded correlator. Last winter, we submitted a proposal with Edwige as PI to observe Sulphur-bearing species in GG Tau. During the time Anne and Edwige were in Hanoi, we learned that the proposal had been accepted as a test for the new correlator. The new observations are of higher quality than the 2015 observations and we confirmed the detection of a new species (H_2S) in the proto-planetary disc. We are working on the new data set and will soon publish the results.

Anne and Edwige spent a weekend with us and we took them to the beautiful Tam Coc-Bich Dong region in Ninh Binh.

SEAAN MEETINGS IN CHIANG MAI AND MANDALAY

Diep represented Viet Nam at a meeting of the South-East Asia Astronomy Network where the charter of the organization was discussed. He reports below.



The SEAAN Charter working group in front of the AstroPark's mirror coating chamber

Following the Ha Noi meeting of the South-East Asia Astronomy Network (SEAAN), in December 2016, about which I had reported earlier, I was appointed member of a working group having mission to improve the writing of the Network's charter. As its name says, SEAAN is a network gathering astronomers from the South-East Asia region, which includes eleven member countries (Brunei, Cambodia, Indonesia, Laos, Malaysia, Myanmar, Philippines, Singapore, Thailand, Timor-Leste and Viet Nam). Though the number of countries is small, the development of astronomy in these countries is quite diverse. It is rather advanced in some but nearly inexistent in others.

SEAAN was created in 2007 and since then it had been using a version of its charter that had been adapted from another charter. Many articles needed to be updated to fit with the new developments and conditions in the Network. The working group consisted of seven members and was formed following the conclusion of the previous SEAAN meeting that had taken place in Ha Noi over a year ago.

The SEAAN Charter working group visiting a regional observatory located nearby Astropark

We had quite a lot of discussions and email exchanges in preparation for the meeting, which took place in Chiang Mai's AstroPark on September 28th and 29th, 2017. AstroPark is the newly built headquarter of the National Astronomical Research Institute of Thailand (NARIT). During the two days, we discussed important points that had been raised before and during the earlier meeting, such as the terms and roles of the Chair and Vice Chair (a new position), criteria for recruiting new members, procedures for forming working groups under SEAAN and for appointing group leaders, publication of proceedings of SEAAN meetings, guidelines for creating a website and maintaining a member database. At the end of the two days, we had reached consensus on all points and we were able to write down the new version of the Charter, which has been ratified later on by all national representatives present at the 9th SEAAN meeting in Mandalay (Myanmar).

The meeting at AstroPark was an opportunity to visit the installations of NARIT, starting with an impressive and modern mirror polishing and coating facility. NARIT operates a 2.4 metre optical telescope and they are able to recoat the mirror by themselves. They have been producing hundreds of 250 mm diameter Dobsonian telescopes to be given to high schools all across Thailand and to some universities and schools in neighbouring countries, such as Cambodia and Myanmar. They have also produced half a dozen of 0.5 to 1 meter diameter telescopes to equip the so-called Thai regional observatories scattered around the countries. We visited mechanical workshops and radio laboratories where they can build high precision mechanical parts and assemble receivers, in preparation for their project to build three 40 m radio telescopes as part of a very long baseline interferometry network. NARIT is also maintaining a powerful high performance computing system, which attracts users from many outside institutes and a library where NARIT researchers can access most scientific journals.

Diep attended the 9th SEAAN annual meeting in Mandalay, Myanmar, and reports about it below.

From November 29th to 30th, I attended the 9th SEAAN annual meeting at the University of Mandalay, in Myanmar. Like in some other countries of the region, there is very little astronomy teaching and research in Myanmar, just some astronomy lectures being given in the department of physics at the University of Mandalay. The meeting was an important event for the University. High level authorities of the Mandalay state, such as the minister of education, attended the opening session. On this occasion, the IAU Office for Astronomy Development and the National Astronomical Observatory of Japan (NAOJ) offered the University of Mandalay several optical telescopes with the aim of promoting astronomy in the country.

As usual, a morning was dedicated to the network business meeting and three other sessions were for the presentation of scientific reports. Country representatives presented national reports at the business meeting; in addition, we adopted the new version of the Charter and elected the new chair and vice chair, respectively Boonrucksar Soonthornthum and Hakim Luthfi Malasan; we discussed steps to be taken to develop astronomy research and education in the region and we

agreed to organize training workshops and keep holding annual meetings.

From left to right: Diep, Sze-leung Cheung (chair of IAU OAO) and Loc at the Mandalay SEAAN meeting

The science sessions were attended by many lecturers of the University of Mandalay. It was the first time that an SEAAN meeting was organized in Myanmar, an opportunity to attract the attention of local authorities and media to astronomy, a science which is part of the Burmese national culture but is not developed as it should in the country.

EAO MEETING IN SEOUL

The East Asian Observatory held their annual users meeting at Seoul National University. Diep was invited and reports below.

During the first half of 2017, Viet Nam joined the East Asian Observatory (EAO) as a partner under observer status. The MoU was signed between EAO and Vietnam National University in Ho Chi Minh City. This had been possible thanks to the strong push of the EAO directorate, and in particular of its chair, Professor Paul Ho. EAO is a joint observatory which was formed by EACOA (East Asian Core Observatories Association) for the purpose of pursuing joint projects in astronomy within the East Asian region. By joining EAO, Vietnamese astronomers can have full access to all EAO facilities. Currently, EAO is operating the James Clerk Maxwell Telescope (JCMT), a submillimetre-wavelength telescope at Mauna Kea Observatory in Hawaii. From January 30th to February 2nd, 2018, EAO organised its third annual users meeting at Seoul National University. Thanks to the financial support from the National Astronomical Observatory of Japan, I could attend the workshop. One day before the workshop, we heard presentations of the large programmes, currently using 50% of the available JCMT science time. The other 50% are spent on smaller projects led by Principal Investigators (PI). We heard presentations of the current activities of the Observatory, future prospects, large programmes and scientific reports. Then the JCMT workshop gave a chance to the telescope's users, in particular the new ones, to learn from experts how to use the tools and methods of JCMT data reduction and analysis. Together with Dung, I joined the Large Programme on *B-fields In Star-forming Region Observations* (BISTRO). The aim is to map the polarization in the densest parts of the Gould Belt star-forming regions in order to address currently open questions on star formation, such as the role played by magnetic fields and turbulence in star formation. I enjoyed very much the friendly environment within the BISTRO group. They welcomed the participation of Viet Nam and allocated data from a region of the sky, Auriga-California, for us to work on.

ASTRONOMY SCHOOL IN CHIANG MAI

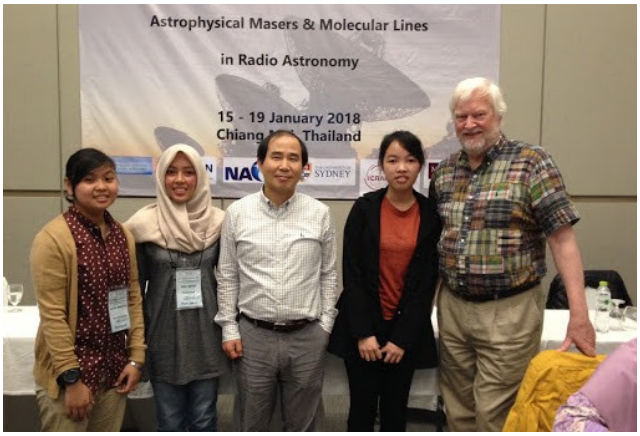
Thai attended a Winter school in Chiang Mai last January. She reports below.

I attended a school in Chiang Mai, Thailand, from 15th to 19th January 2018. The theme of the school was "*Astrophysical Masers and Molecular Lines in Astronomy*" with the aim of exploring the potential of the new Thai National Radio Telescope in this domain. On this occasion, fifteen scientists from several prestigious Institutes and Universities of the region, such as KASI , NAOJ, NARIT, ASTRON and the University of Sydney, had been invited to give lectures.

There were 28 participants attending the school, 3 from Indonesia, 3 from Japan, 2 from Philippines, 19 from Thailand and I was alone coming from Viet Nam. Among them were two

PhD students, from Thailand and from Japan, the others being mostly graduate students.

The school lasted five days and focused on Masers and Molecular Lines related topics. We also spent a morning on the site of the Thai National Radio Telescope (TNRT) in Huai Hong Khrai Royal Development Study Centre where the 40-m TNRT is scheduled to be fully operational in early 2020. Near the end of the school, all students were divided into six groups, each group being given the task to study a short scientific paper under close supervision of the lecturers and to present a summary of it. I joined a group of five, each from a different country, and we worked on a paper on rotating proto-stellar objects and the jet launching mechanism, under supervision of Dr Kee-Tae Kim from KASI, South Korea.



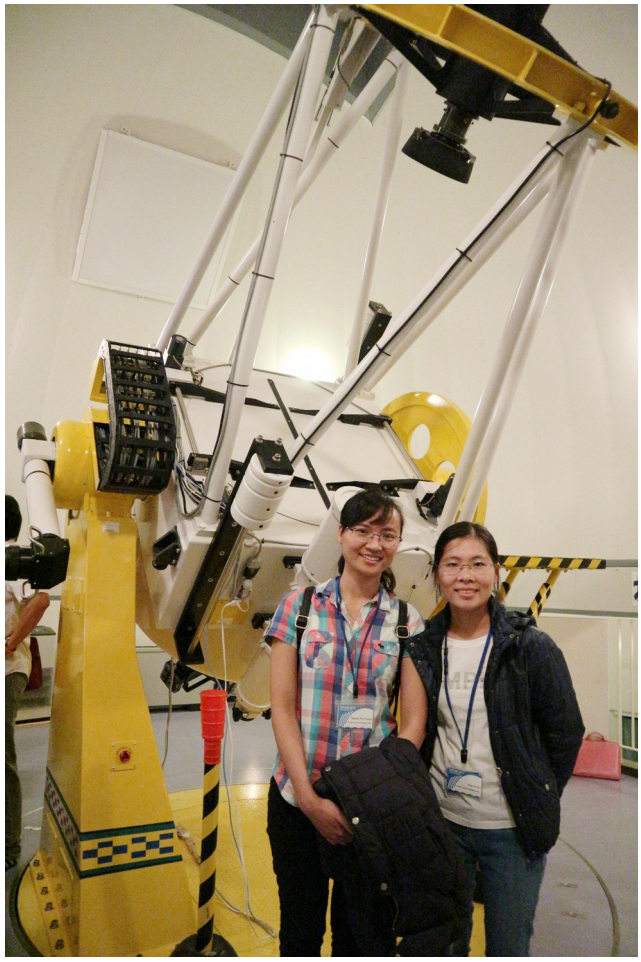
Thai, two schoolmates, and lecturers at the NARIT-SOKENDAI Winter School 2018 in Chiang Mai

The school was beneficial to me. It gave me a lot of basic knowledge in astronomy which, as a young graduate student, I was missing. I found most topics addressed in the school quite interesting, in particular Molecular Lines in Radio Astronomy and Galactic Structure & Maser Astrometry.

EAYAM MEETING IN JAPAN

At the end of last year, Hoai and Phuong presented their work at the EAYAM meeting in Japan; Hoai reports below.

The East Asian Young Astronomers Meeting (EAYAM) is organized by EACOA members, ASIAA, KASI, NAOC and NAOJ, to promote interaction and collaboration between young astronomers in East Asia. It was first organized in Taiwan in 2003 and then in Japan (2006), China (2008), Korea (2011) and Taiwan (2015). Last year, it took place in Ishigaki Island, Japan. They welcomed about 70 participants mostly from Taiwan, Korea, China and Japan and several from other countries. All participants were expected to give either an oral or a poster presentation.



Phuong and Hoai in front of the 105 cm optical telescope of Ishigakijima Atronomical Observatory.

Usually, participants at the meeting get support for travel and living from their home institute. In our case, lacking such support, thanks to NAOJ with the help of Prof. Kaz Sekiguchi, Phuong and I could attend the meeting. Phuong presented her work on GG Tau and I on evolved stars. We had a very good time in the beautiful island, Ishigaki, meeting many young astronomers, sharing with them experience in education and research, learning about the different research conditions in different countries. We also had a chance to visit a station of the

VLBI array aimed at the exploration of the 3-D structure of the Milky Way Galaxy based on high-precision astrometry of Galactic maser sources, the VERA Ishigakijima station, and the 105 cm optical telescope of the Ishigakijima Atronomical Observatory.

H&H20127 MEETING in MANDALAY

Loc attended a meeting in Mandalay of a working group on the history of astronomy in South East Asia; he reports below.

In November 2017, just before the SEAAN meeting about which Diep reports elsewhere in the Newsletter, a meeting of the working group on SEAAN History & Heritage (H&H 2017) took place in Mandalay (Myanmar). I was the only Vietnamese attending the meeting, which focused on "*exploring the history of SE Asian astronomy*" and I gave a presentation on the history of Vietnamese astronomy. It was the second meeting of the working group, the first had taken pace in Ao Nang, Thailand, in 2015.

"Burmese Zodiac." At Amarapura, south of Mandalay, this 1847 fresco in the north-eastern entrance porch of the Kyauktawgyi Pagoda depicts a Burmese astronomical chart showing constellations. Photo Mick Palarczyk.

The Meeting was organized by NARIT, largely by Professor Wayne Orchiston who unfortunately was refused an entrance visa to Myanmar and could not attend. He retired in January and his presence was very much missed. Yet, the meeting ran smoothly and the proceedings will be published by Springer (Orchiston, W., and Vahia, M. (eds.), 2018. Exploring the History of SE Asian Astronomy: A Review of Current Projects and Future Prospects and Possibilities).

My presentation focused on the Vietnamese calendar, a broad topic but sparsely studied. The main existing research works are from Hoàng Xuân Hãn (between 1944 and 1982) and from Lê Thành Lân who worked alone on the subject since 1986, for now thirty years. He discovered three old Vietnamese perpetual calendars and his work covers the period from 1544 until today; he gave evidence for occasional differences between the Vietnamese and Chinese calendars. His on-going research on other old calendars, using in particular ancient books of history, aims at refining our knowledge, which is important for historians to properly convert the dates mentioned in old documents into Gregorian dates.

Loc (extreme right) and participants of the H&H2017 Mandalay meeting

The history of the Vietnamese calendar cannot be separated from the history, through the whole feudal period, of Vietnamese astronomy, meaning the history of the royal astronomy agency. After having formed an independent state in the 10th century, the successive Vietnamese dynasties kept maintaining an astronomy agency with mission to calculate the calendar, forecast weather, and gain expertise in identifying propitious days (so-called hemerology). Their work in astronomy and meteorology was one of the main scientific activities of feudal Viet Nam, which did not otherwise pay much attention to science. The history of these agencies, their staff,

equipment and location has been studied and described in a comprehensive way.

I very much enjoyed my visit in Myanmar, where I was for the first time, from the old royal capital Mandalay, through the extraordinary Bagan, the sacred Kyaktiyo (Golden Rock), and to the crowded Yangon. In Amarapura, near Mandalay, I visited the Kyauk Tau Gyi pagoda where beautiful drawings of constellations and celestial deities had been drawn nearly 300 years ago. The choice of Mandalay as host of the H&H meeting was due to the existence of this pagoda. I wanted to visit the planetarium in Yangon, a gift of Japan, but it was closed.

Burmese are very kind and devout people. They have their traditional calendar and people are named after the day when they were born. They also have their own astrological system partly inherited from India. The legacy of Indian culture to South East Asia is indeed a major topic of interest and research for the H&H network.

AN INTERVIEW FROM NGHIEM VU KHAI, DEPUTY DIRECTOR OF VUSTA

As we were disappointed by the relative passivity of some learned societies, in particular the Vietnamese Astronomy Society and their apparent lack of interest in the success and progress of the communities that they are meant to represent, we decided to find out about the organization from which they depend, the Vietnamese Union of Science and Technology Associations (VUSTA). VUSTA is a socio-political organization acting as a bridge between the Associations on the one hand, and the Party and the State on the other. Dr. Nghiem Vu Khai, Deputy Chair of VUSTA, former deputy minister of S&T, very kindly accepted to answer questions from Tuan Anh and Hoai who recorded the interview and report below. We are grateful to Dr. Nghiem Vu Khai for having expressed himself very openly and the text below, while having been edited by him, reflects well what he said.

VATLY: We have read the information available on the web site of VUSTA. Could you tell us what have been the most important accomplishments of VUSTA recently, say during the past year.

Nghiem Vu Khai: In only a few days we shall celebrate the 35th anniversary of VUSTA, which was founded on March 26th, 1983. It is a socio-political organization of the Vietnamese S&T intellectuals, the biggest network of non-governmental S&T organizations in Vietnam, a nation-wide and multi-disciplinary network of 79 associations, 63 provincial branches and over 500 affiliated S&T organizations. Its missions are:

1. Gathering and uniting Vietnamese intellectuals in S&T inside and outside the country, coordinating and guiding the operations of member associations.

2. Acting as a bridge between member associations and the Party, the State and Vietnam Fatherland Front and other organizations to address common issues of relevance to VUSTA intellectuals.

3. Representing and protecting the legal rights and interests of its members, member associations, and Vietnamese intellectuals in S&T.

Dr. Nghiem Vu Khai, Deputy Chair of VUSTA

The main activities of VUSTA consist of consultancy, assessment, reviews and inspection. VUSTA gives advice and provides comments on problems and risks potentially raised by new projects, on regulations and guidelines and on legal documents. For example, 15 years ago, when it had been decided to build the Son La hydropower plant, three options were being considered, at different altitudes: high (265 m

above sea level), medium (215 m) and low (in the form of several staircase dams). EVN (Electricity Viet Nam) wanted to produce more electricity and pleaded for the high option, offering nearly three times as much power than the medium one. However, there were important risks associated with this option, such as earthquakes, security and national defence problems; an incident would have had disastrous consequences for the Red River delta region. VUSTA played a major role in making the nation attentive to such risks, with scientists addressing the National Assembly and the Central Committee of the Party, writing down recommendations and organizing workshops. The main argument was that one should pay attention not only to economy, but also to social and environmental impact. There were three important factors to be taken in consideration: electricity production, risks of flood and drought, and economy development in the north-western region. Their constraints and assets had to be harmoniously combined. In 2003, the National Assembly finally decided to choose the medium option.

A second example is bauxite mining in the Highlands, an event that had a very strong impact on public opinion in the country. I was a member of the 12th National Assembly (2007-2011) at that time and I saw how well VUSTA handled the matter. They analysed the environmental risks, in particular the issue of the red mud wastes, and assessed the economic value of the project. Moreover, there were problems of transportation, of power supply, of technology being used in the exploitation of the mine. VUSTA expressed its views on the basis of a scientific assessment, accounting for economic benefits, protection of the environment and national security. We did not support unbalanced views but adopted an approach that could be acceptable to stakeholders, including government agencies.

Recently, a bill ruling associations became an issue of great concern to the society. This bill defines the rights and obligations of social organizations, state agencies and other organizations and individuals, a rather complex issue. When it was discussed in the National Assembly, VUSTA presented its views on a number of articles. Fortunately, they were shared and approved by a majority of members. The draft bill is now being reviewed and supplemented in the spirit of complying with the Constitution, respecting human rights and the rights of citizens and, at the same time, allowing for proper implementation by the State.

Concerning dissemination of S&T knowledge, VUSTA has been playing an important role in shaping the project of Vietnamese Digitalized Knowledge System. VUSTA evaluates information incorporated into the system, as scientifically, objectively and accurately as possible. The system covers a wide range of knowledge, from agriculture, health care, social sciences, ageing populations to natural and physical sciences and sciences of the Earth and of the Universe. It is meant to be a kind of Wikipedia better adapted to Vietnamese specific needs and to provide a help desk with support for questions and answers. In this context, allow me to recall the words of Ho Chi Minh in May 1963 on the occasion of the first meeting of the Vietnamese Association for the Popularisation of Knowledge. Speaking about S&T, he said that science has its source in manufacturing and production activities of the People and, in return, must serve the People in contributing to the successful achievement of such activities. Scientists are like silkworms, he said, they must produce fine silk to serve the society. Disseminating knowledge is indeed high on the list of VUSTA missions.

Annually, VUSTA honours and recognizes the contribution of intellectuals in the country through awards and prizes. VUSTA's awards honour activities related to strengthening intellectual unity, promoting creativity in society and disseminating knowledge. In this way, VUSTA honours scientists with a long and exemplary scientific career, both at the national and provincial levels. VUSTA periodically awards those who have made excellent scientific and technological contributions to the country's development with the VIFOTECH Prize.

VATLY: The learned societies with which we are familiar, the Vietnamese Astronomy Society (VAS) and the Vietnamese Physics Society (VPS), are not very active in comparison with similar societies in developed countries. Is the role of VUSTA to encourage them to be more active? For example by taking initiatives such as the Young

Minds Association created by the European Physics society http://www.epsyoungminds.org/about-us/to

Nghiem Vu Khai: VUSTA covers many member associations, societies and organizations. Some of them were established in response to needs of the society and are very well developed and recognized, such as the Association of Accountants and Auditors, the Medical Association, etc. We also cover societies for which the needs of the society are not that high, this is why the government needs to support such associations. But these have to fight their own way to operate efficiently, to have a vision of the future, to define objectives and strategies for their development. Learned societies should get together to propose common projects aiming at improving the development and progress of fundamental and applied research.

However, VUSTA is well aware that there are associations, which lack the skills and experience necessary for raising funds for their activities. We try to help them with some training in the domains of funding, management and evaluation of scientific missions and projects. We also update at regular intervals the policies and regulations that govern scientific activities.

VATLY: Our French colleague Pierre Darriulat, who has been working with us in Hanoi for nearly twenty years and has indeed created our research team asked to become a member of the VPS; however, it turned out to be impossible because VUSTA regulations prevent membership of foreign scientists. Can you comment?

Nghiem Vu Khai: I used to be a member of a science association of Japan when I was a PhD student there, and I am still an honorary member of several foreign associations and organizations. I strongly support the idea that foreign people can become members of VUSTA associated societies, at least as associate or honorary members. I mentioned this point at the meeting of the Standing Committee of the National Assembly when discussing the bill on associations in 2015. Of course foreign scientists are welcome to join research activities and participate in workshops or conferences organized by VUSTA. Concerning the membership issue, I think that VUSTA regulations do not stipulate conditions of membership for foreigners. This does not mean that such membership is absolutely excluded. The issue should be studied in the framework of the relevant legislation.

VATLY: What is the position and policy of VUSTA toward overseas Vietnamese intellectuals? How does VUSTA consider that they could contribute to the progress of scientific research in the country?

Nghiem Vu Khai: Overseas Vietnamese intellectuals have a very important role to play. In addition to contributing their knowledge, they also help with fostering relations with scientists in their host country, thereby strengthening the links between such countries and Viet Nam. An important mission of VUSTA is to bring together and unite intellectuals from both inside and outside the country. I have discussed this issue with some prestigious overseas Vietnamese scientists. They also have proposals for several policy initiatives and have discussed mechanisms to mobilize the contributions to the development of Viet Nam of scientists in G7 and G20 countries. VUSTA has signed a cooperation agreement with the State Committee for Overseas Vietnamese and has jointly organized activities regarding this topic. In the current year, 2018, we shall host a workshop on how to make good use of overseas intellectuals, in cooperation with Vietnamese Embassies for what concerns the practical implementation.

VATLY: A few years ago Minister Nguyen Quan said that “As long as we shall pay no attention to the living conditions and wages of the actors of science and as long as we shall prove unable to change our old methods of management, we shall fail to let science and technology take off.” It sounded to us as a very pertinent remark. Can you comment?

Nghiem Vu Khai: I share very much the views of Minister Nguyen Quan. For scientists, the most attractive thing is not money but, in this order, a good working environment, recognition and respect, and sufficient wages. Salaries must be

enough to cover their basic needs and those of their families. This is obviously not the case today.

VATLY: What is the most important factor for S&T development according to you?

Nghiem Vu Khai: The S&T policy of the country must be further reformed. For a long time, the GDP growth has not been S&T based. If we keep acting this way, Vietnam will be unable to overcome the middle income trap, and will fail to reach proper industrialization and modernization. The government investment of 2% of the budget into S&T development is a good thing, but private investments are very low. In developed countries such as Japan, USA, Korea, EU... the investment from non-governmental sectors may be three to four times what the government contributes. In short, we need to invest much more in S&T and innovation but the private sector must contribute a large part. Science is the driving force for development, the future of the society rests on its progress.

Contact: vatlynewsletter@gmail.com
The VATLY web site: https://vnsc.org.vn/dap

– PHOTO ALBUM –

From left to right: Tuan Anh, Sun Kun Oh, Phuong, Pierre, Diep, Phuc and Thai

Edwige and Anne taking a boattrip in Ninh Binh

A thousand year old moving banyan tree. These trees have many roots and move around slowly with time. This one has moved by nearly 50 m around the nearby temple in the last thousand years. From left to right: Phuong, Thai, Anne, Edwige, Diep and Loc

From left to right: Thai, Phuong, Anne and Hoai on top of the VNSC building

Ngo Bao Chau, Pierre, Thuy-Han and Diep

Professor Van and Diep at the Exoplanetary Science conference in Quy Nhon (2018)

From right to left: Phuong, Hoai, and Madoka (Japan)

EAYAM participants enjoying dinner together

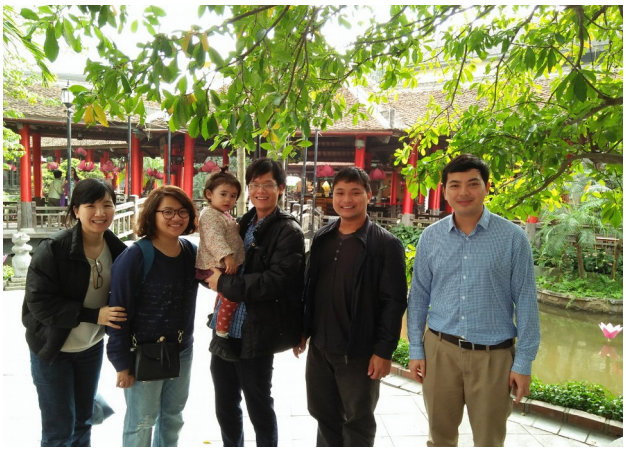
Diep's 37th birthday on February 23rd

Dr Hoang Chi Thiem lecturing on interstellar dust, dust polarisation and magnetic field at VNSC

The, a high school teacher, who made her bachelor and master thesis wth VATLY, gave birth to a strong boy on Viet Nam's Independence Day

Group photo of EAYAM 2017 in front of the Ishigaki VERA station

Phuong (second from right) and friends at the EAYAM meeting in Kabira Bay on Ishigaki island



From left to right: Nhung, Huyen (Alain Maestrini's wife), Anne-Vy in Tuan Anh's arms, Loc and Diep at the Sen Restaurant on the West Lake

Phuong and Professor Woong Tae Kim at the EAYAM meeting

Pham Thanh Tung, Tuan Anh's son

After Hoai's thesis defense, from Hoai's husband Son (left) to Diep's wife Dung (right).

Group photo of the NARIT-SOKENDAI Winter School 2018. Thai is third from left

Group photo of the EAO/JCMT Users' Meeting 2018 in Seoul