

First China-Europe Solar Physics Meeting: a Summary

Concurrently with the Intergovernmental Belt and Road Initiative Summit, the first China-Europe Solar Physics Meeting (CESPM-1) took place during 15 – 19 May 2017, in the city of Kunming, Yunnan Province, China. It was organized by researchers from an array of prestigious Chinese and European institutions. For China, it was made possible via the synergy of Yunnan Observatory, Nanjing University, National Natural Science Foundation of China and the Chinese Academy of Sciences. It was also strongly endorsed by the Chinese Astronomical Society and the European Solar Physics Division, a joint division of the European Physical Society and the European Astronomical Society.

CESPM-1 was the historic culmination of bilateral initiatives between China and France / Germany, leading to multiple solar physics meetings in 1990s and 2000s. European integration and the need to involve the wider European solar physics community in a common forum of scientific interaction led to this synergistic effort and a meeting that was attended by a total of 150 participants, including 104 Chinese and 46 international colleagues, predominantly from Europe.

The cordial interaction and osmosis between the Chinese and European communities highlighted the need for setting a common course in fundamental solar physics, following the lead of the joint Chinese-European space-physics mission, SMILE, recently undertaken between the European Space Agency and the Chinese Academy of Sciences. In the course of this CESPM debut, it was decided by the Scientific Organizing Committee that Sino-European gatherings will be taking place biennially, alternating between Chinese and European locations. The place for the Second Meeting of the series has already been announced for May 2019 and is the Croatian island of Hvar in the Adriatic Sea. Thanks to its historic observatory, Hvar is one of Europe's solar physics landmarks.

Kunming, on the other hand, is a focus point for solar physics in China. Home of the Yunnan Observatory and the city closest to the New Vacuum Solar Telescope (NVST) in Fuxian Lake – one of the largest vacuum telescopes worldwide – Kunming is also at proximity to several other solar telescopes and efforts to implement future telescope concepts. Kunming is further called the Spring City of China due to its temperate climate, despite its altitude of 1,900 m. Culturally, Kunming is strategically situated on the Southern Silk Road connecting Europe and China and is still a major hub for commercial relations between China and its peninsular Indochinese neighbors in the South.

The CESPM-1 Scientific Organizing Committee structured the meeting's deliberations into five distinct sessions, namely S1: Solar Cycle and Photosphere, S2: Solar Chromosphere and Corona, S3: Solar Flares, S4: Coronal Mass Ejections and S5: Solar Instrumentation, thus attempting to capture and manifest a representative snapshot of contemporary solar physics.

All oral presentations and posters complied to very high standards, showcasing the multi-faceted activity taking place in the thriving field of solar physics. In S1, dealing with the photospheric interface between the solar interior and atmosphere, attention was drawn to

the fundamental operation of the solar dynamo, magnetic flux emergence, electric currents and helicity, magneto-convection, physics of sunspots and small-scale magnetic diagnostics. Interesting new ideas on coping with the incomplete measurements of solar magnetic fields above the photosphere were presented and debated, while new and stunning flux emergence simulations were discussed intensely. In S2, intriguing aspects of chromospheric, transition-region and coronal dynamics studied by an expert blend of theory, modeling and observations by long-standing and new instruments aimed to decipher part of the solar atmospheric “zoo”. S3 focused on features of major and smaller solar flares, along with potential pre-flare signals and post-flare repercussions. With unprecedented detail, recent observational information on oscillations and coronal seismology related to flares, as well as morphological and topological information of flaring coronal loops, sketched a wide open sub-field dictating further efforts and attention. The sub-field of the propagation of solar eruptive transients, their arrival at Earth and geoeffectiveness, was discussed in S4. In this front, debates loom all the way from the initiation of the instabilities deep down in the lower solar atmosphere, to their near-Sun propagation and time of arrival. Largely due to the space-weather implications of solar transients, it emerged from the discussion that numerous efforts around the world need to be evaluated, both independently and in conjunction, in order to assess the current state-of-the-art and plan future groundbreaking strides. But the future itself was the subject of S5: ground- and space-based concepts in development, each with their own strengths and caveats, outlined a future in which a wealth of new data flowing along those of existing data-providing instruments will require a deep and challenging revisit of theories, practices and procedures to lead the community to the next level of solar understanding and forecasting. Young, enthusiastic researchers, will be needed to implement these ideas and projects and China or Europe seem to be in no shortage of them. In brief, a bright observational future for solar physics was outlined during the meeting.

Social functions of the CESPM-1 featured a visit to the scenic, serene seat of the NVST at Fuxian Lake. A kind tour of the facilities, including a large radio antenna and Nanjing University’s ONSET telescope, was offered to the participants. The ONSET telescope, with openly available data since 2012, is embedded in a 6-petal dome that, when opened, forms a spectacular lotus flower. Many questions from eager, enthusiastic learners were addressed, while Yunnan Observatory extended an invitation to the European community for students and young postdocs to join the local team effort for future NVST and ONSET observations. Two dinners were also offered, one at a local, lake-shore restaurant and another at the main meeting venue. Good spirits mingled with further discussion on the science challenges still ahead of us.

CESPM-1 concluded with a summary that reflected the gratitude of the European solar physics community toward the exemplary organization and hospitality offered by Chinese colleagues. The historic scientific and cultural links between the two communities were reaffirmed. What became equally clear is the anticipation of the next meeting in European soil and the strong belief that the CESPM initiative will not only continue, but will thrive, in the foreseeable future. Indeed, frank scientific interaction and progress never minded any borders.

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