

# The National Solar Observatory (NSO) Users Committee Report

To: Dr. Valentin Pillet, Director National Solar Observatory

Committee members participating:

Roberto Casini (remote), Debi Prasad Choudhary (remote), Rachel Howe (remote), David Jess, Haosheng Lin (remote), Andy Marble, James McAteer (remote, outgoing chair), Karin Muglach (chair), Steven White

NSF participants:

Carrie Black, David Boboltz

NSO participants:

Alisdair Davey, Ryan French, Gordon Petrie, Alexei Pevtsov, Valentin Pillet, Thomas Rimmele, Don Schmit, Han Uitenbroek, Mark Warner

We are grateful to Jennifer Ditsler for her coordination of the meeting logistics, and to Ryan French and Gordon Petrie for their lunchtime science presentations.

Carl Henney and Hazel Bain are leaving the Users Committee, we would like to thank them for their valuable contributions and we wish them good tidings in their future endeavors. We would like to welcome two new members, Dr. Andy Marble and Dr. Steven White.

The charter of the UC is to provide feedback and advice on status, desired enhancements, and future new developments of NSO facilities and operations. The aim of the UC is to provide such feedback and advice in this report as a bulleted list of recommendations and remarks. We look forward to hearing back from the director in response to each recommendation provided. The recommendations should not be considered ranked in any particular order.

The chair remains available to the Director to discuss any items at any time during the year.

Submitted on behalf of the NSO Users Committee this 5th day of August, 2022, on behalf of the NSO User Committee.

Dr. Karin Muglach (chair)

## UC Recommendations arising from the May 2022 UC meeting

The UC provides the following recommendations for the NSO Director to consider at his discretion. We look forward to hearing back from the Director in regards to which recommendations have been accepted and which actions have been planned. In particular, we note we would like to meet again before the end of calendar year 2022 to have more focused discussions as noted below (at the end of this report).

We would like to compliment NSO to the progress made this last year, especially considering the continued impact of COVID19. Commissioning phase of DKIST is now in full swing, GONG refurbishment is moving forward and there is finally progress on SOLIS with first light hopefully this year.

We accept the directors detailed response to the 2021 UC report, including the discussion of future upgrades.

### Recommendations for NISP:

- GONG refurbishment

The replacement of the primary GONG cameras represents a significant change to the network, the impacts of which will be a potential concern to users. We recommend intentional communication to the community of the pertinent camera specifications, any steps taken to mitigate differences, anticipated impacts to data products, and relevant quantification where available and appropriate. While some aspects may not be fully known until the cameras are deployed and in use, advertising what can be determined in advance could prevent unnecessary confusion and/or concern. A document such as a technical report that can be referred to and referenced in the future is perhaps advisable.

- GONG zeropoint correction

The GONG zeropoint correction is a very important calibration issue of interest to both operational and science users of GONG magnetic field data. We affirm the importance of ongoing efforts by the NISP group to further mitigate zeropoint bias via remote modulator tuning and encourage them to continue considering hardware modifications that would enable direct measurements of zeropoint bias if the former approach proves inviable or insufficient.

- NISP hires

We welcome the plan for two new NISP hires and the contribution they can make to handling the workload and improving morale within the NISP team.

- SOLIS construction

The UC is glad to see that there is finally progress on SOLIS. Construction is completed and we are looking forward to first light by the end of this year.

- Next Generation Global Oscillations Network Group (ngGONG) proposal

The synoptic instruments of NSO are aging and need urgent replacement for continuing the heritage of acquiring full disk magnetograms and other synoptic products. Therefore, the UC supports the NSO plan to build ngGONG. The UC endorses the new approach for the resubmission of the ngGONG proposal, while recognizing that inter-agency efforts and outreach to SWORM need to continue to develop momentum for ngGONG.

- Changes in release of GONG helioseismic data

The UC acknowledges the changes in NISP data release in an effort to decrease staff workload. Nevertheless, communication with users about the practical implications of the change in the GONG data release schedule has not been very clear or consistent and we encourage NSO to be transparent about such issues in the future.

### **Recommendations for DKIST:**

- Preparation for extended operation at DKIST

The members of UC are glad to see the smooth transition from construction to operation at DKIST, and appreciate early science results. We applaud the Project for the job well done. We acknowledge the complexity involved in its operation and the fact that project management is aware of the need to make the operation more efficient. We understand that current staffing does not allow for extended hours of operation. However, given the additional productivity and benefit to the community that an extended-hour operation will bring, we suggest the DKIST management starts the planning for extended hours of operation as the team gains more experiences and feel it is ready. We are looking forward to recognizing efficiencies in operation that will permit using as much of daylight for observing as is feasible.

- Maintaining an instrumentation program at DKIST

The UC supports the idea that the DKIST team is proactively considering to upgrade the first-generation instruments and laying the foundation for the next generation. Given the long time required for new instrumentation to go from conception to completion, we hope the DKIST team can keep this momentum going and maintain a budget for new instrumentation development.

- Continuing the Ambassadors program

The UC recommends that every effort should be made to ensure the longevity of the Ambassadors program. The Ambassadors program has clearly been a large success for the USA community, measured in terms of number of people, papers published, observing proposals, and training. It clearly takes time, effort, and money and the UC supports all efforts to ensure this program is continued into the future.

- DKIST L2 data development:

The UC appreciates the progress of the NSO effort to produce level 2 data for selected observations. We expect them to finish the current implementation (which is well on its way) and anticipate to see how it works with real DKIST data by the time of the next UC meeting. We are also looking forward to future developments (e.g. new/updated/different inversion codes, spatially coupled inversions) once the current L2 pipeline is successfully implemented.

- Using DDT for coordinated observations

The UC welcomes NSO's involvement in WoU-MMA NSF's 10 Big Ideas. To support this activity it recommends that Director's Discretionary Time (DDT) should be used for coordination with Parker Solar Probe and Solar Orbiter. This will cover about 10% of the available observing time, but it will NOT have a six months proprietary period, the data is expected to be released to the public right after calibration. We understand the difficulties of coordinated observations and hope that this will be alleviated by using DDT.

- DKIST observing proposals

As only a very limited number of selected DKIST observing proposals (A and B rated) have received data in OSP 1 we recommend A ranked OSP1 proposals which never had data taken to roll-over to OSP2.

### **Recommendation on organization of the Users Committee:**

- The UC would like to continue to have one united NSO UC meeting once a year (preferably in person), but also allow sub-committee meetings for more specific topics. In particular, the UC suggests to have mid-term meetings, around 6-7 months after the full annual meeting. These would be sub-committee meetings each for DKIST and NISP which can be held remotely. The UC agrees to expand UC membership (adding 2-3 people), preferably adding members of the modeling community that are using NSO data.

For the next full UC annual meeting (spring 2023) we would like to see brief reports from each DKIST instrument team on progress and challenges.