2019 National Solar Observatory Users Committee Report

To: Dr. Valentin Martinez Pillet, Director National Solar Observatory

The National Solar Observatory (NSO) Users Committee (UC) met 14-15 May 2019 at the NSO HQ in Boulder, Colorado.

All current committee members were present at the meeting:
Bain, Casini, Choudhary, Henney, Jess, Lin, McAteer (chair), Muglach

All current members have terms ending May 2021, at the discretion of the NSO Director.

NSO participants: Davey, Hill, Martinez Pillet, Raftery, Rimmele, Uitenbroek

External participants: Rast (CU Boulder, DKIST SWG chair), de Wijn (HAO), Burkpile (HAO)

We are grateful to Jennifer Ditsler for her coordination of the meeting logistics, to Dr. Raftery for her lunchtime presentation on the new NSO website, and to members of both NISP and DKIST for their presence on both days.

We thank Doug Braun for his lengthy and valuable contributions to the UC during his term and we wish him good tidings in his future endeavors.

The charter of the UC is to provide feedback and advice on status, desired enhancements, and future new developments of NSO facilities and operations. We aim to provide this feedback in this report as a bulleted list of recommendations and remarks within 1 month of the meeting and we look forward to hearing back from the director within 3 months in response to each recommendation provided. The recommendations should not be considered ranked in any particular order.

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

Submitted on behalf of the NSO Users Committee this 21st day of June, 2019

on behalf of the NSO UC
Dr R.T.James McAteer (chair)

UC recommendations arising from the May 2019 Users Committee 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 before October 2019 in regards to which recommendations have been accepted and which actions have been planned.

- **The Director should consider inviting one more member onto the UC, and the 2020 UC meeting dates should be confirmed.**

With Doug Braun rotating off, it may be useful to have one more helioseismology scientist involved. Or it may be worth considering an expert in modeling, to assist with broadcasting the many varied NSO products to potential new users. We would be open to two new members. It would be useful to have a new person(s) included in the 2019 telecon in October.

After some discussion at the meeting, it is clear the 2nd week of May (12-13 May) remains the best option for our annual meetings. We would be open to suggested alternatives, but we ask that the next meeting date be confirmed in the October telecon each year.

- **The final draft of the Data Science Policy Advisory Committee document should be clearly and carefully communicated to the community.**

This is clearly of paramount importance for DKIST observations, both during and after the Observing Commissioning phase. We agree that the data policy should be clarified ASAP, so a user can make sensible plans. Items such as what observing commissioning data may be available, and when these could be shared, would be useful inclusions. This will require careful messaging of any *perceived* changes (as noted by the SWG chair), and a good clear plan to ensure the DSPAC document is completed and then advertised to the community. In these communications, it is critical that any *perceived* changes to policy (whether they are actually changes, or just first-time statements) be clearly articulated. Of particular note is the formalization of any proprietary period associated with the data products.

- **The Observing Commissioning phase is another excellent opportunity to grow the ground-based solar physics community in USA.**

The CSP workshops were of tremendous value in growing the USA user community, and we applaud everyone at NSO who organized, ran, and presented at these meetings. We fully appreciate this was a big undertaking for the DKIST project. The next stage of DKIST presents another opportunity and so another challenge. There are management risks with broadening participation at the Observing Commissioning stage, but we encourage the Director to continue with his vision to be as inclusive and open as possible.

The Observing Commissioning period *may appear* as a new development to the community.. Here, it would be very useful if a timeline could be developed to better inform the community of what can be expected, and when. Obviously, this timeline would be subject to change, but it would help to provide useful information to Users regarding what instruments will be available (either by themselves or combined with others), what role the community will be expected to have in this phase, and whether the data acquired will be solely for calibration purposes, or whether the instrument teams can also use these for scientific study (see comment above). Other details (such as specific tasks - e.g., defringing may be helped by a new outlook-, clarifying the order of instruments, and specifying whether the call includes pairs of instruments of just single instruments) would be useful to help as many scientists as possible in considering becoming part of the effort

- **NISP should consider more prioritization of their many tasks.**

It is clear that NISP is spread thin, over many projects. Unless additional funding can be obtained, more strict prioritization will have to be applied to these many tasks. This may mean that some items do not get performed. There are clearly many projects, and insufficient number of FTEs required to do them all. We appreciate the management and tracking of this is outside our remit as the Users Committee, and is probably much more appropriate for the SOC to consider. From the User perspective, we propose that the priorities should be to ensure GONG for the next decade, and bring SOLIS online,

We look forward to a successful SOLIS installation at Big Bear. We would like to receive ongoing status reports and updates from Dr Hill on any events that may change the date for when a User can expect to obtain data from SOLIS at BBSO.

A few NISP items were specifically brought up at the meeting.

- SWPC is concerned that the current GONG processing software will not be supportable on future computer systems at NOAA, at which stage the software will not meet requirements for operational use of GONG. Much of the current software cannot be compiled on modern systems, and a waiver is required today to run the existing 32-bit binary code on NWS computers. We recommend that a plan be implemented to rewrite the current software so that it is maintainable on modern computers and will allow use in an operational environment.

- We recommend improved documentation and web pages continue to be updated, detailing NISP instrument upgrades, software changes, expected improvements to data products and models. These should be easily accessible to the User community through the NSO website.

- We were asked to comment on the GONG upgrades. We concur with Dr Hill's ranked priority list of replacing the cameras, then focus on the modulator to improve the 0-point, then focus on H-alpha.

- We were asked to comment on currently-unfunded tasks. We propose a ranked list of
1 Securing the 1964-2003 newly recalibrated / corrected archive.
2 Include HMI far side.
3 Incorporate autoVMBI.
4 Incorporate post processing corrections).

- **Implementation of the new website design provides a valuable resource for Users.**

The Users committee recognizes that the new NSO webpage will serve as an important resource for the user community. The updated NSO webpage is vastly improved over the previous version and we warmly encourage NSO to continue with their developments. In terms of historical data products, it could be very useful (long term) if crucial instrumentation links (e.g., instrument papers, calibration manuals, etc.), previous scientific results coming from the observing sequence, required acknowledgements, and quick look images could be provided on the specific data webpage. This sort of information is already provided for SOLIS archive observations (e.g., https://www.nso.edu/data/nisp-data/h-alpha/) and is very useful for browsers of these data.

- **The data center is progressing, and should continue to consider the User experience.**

The UC was happy to see the progress with the data center, and to see that it has passed the review this year. We try to consider what the User will see, and so many of the quotes of big numbers, large data volumes, details of the system, etc. don't have to be presented at the UC every year. Instead we would prefer to see what a User will see, as part of their experience in interacting with the system (see 'What the User will see' below).

- **The NSO Community Science plan should ensure emphasizing data products and training as equal priority.**

We would like to see clarity to ensure the two aspects of the NSO Community Science Plan are considered of equal importance and interact with each other. The community-oriented, training aspects is equally important to Users as supplying specific level2 data products.

The 3 level2 data products discussed are excellent focus topics, but it could be useful to recognize priorities and plan for risks (e.g., drop the second Ca line if it is too weak).

- **We request for a 'What the User will see' presentation at the next meeting.**

The standalone presentations from the DKIST teams are useful from a top down viewpoint. However it could be instructive for a user to see an end-to-end system (from submitting an observing proposal, to when and how they will know if they are selected, to when and how they will obtain the data). Rather than a top-down view of the pieces, this would be a vision of how this all fits together into a single User experience. We imagine this vision would be presented by one person, rather than a tag-team effort. This could include a mock-up timeline that a User might expect for one example simple observing proposal and involve the observing proposal, email notices, and a mock-up front end website / entry portal into the data center.

- **The planning and priorities of the Time Allocation Committee should be clarified further.**

Users would like to see more details on the TAC. Examples of such details are the feedback process, proposal release policy, timing of the TAC meetings, the proposed membership of the TAC, how decisions on time allocation will be made. We would welcome an overview of the decision tree that NSO may adopt for allocating time. This "decision tree" should be outlined for both Observing Commissioning, as well as for standard operations. The Users should be made aware of any differences between the two decision trees.

- **The NSO should continue to pursue SPRING/GBSON as a worldwide network for a decade in the future.**

The gathering of NSO and HAO scientists involved in the GBSON proposal was a valuable exercise. It is clear there will be further meetings to fix science requirements, and many UC members hope to participate in these. In particular it is recommended that representatives from the user forecast community, who will use GBSON in an operational setting, be invited to provide input on the desired observational tolerances required for forecasting.

This clearly only progresses as a worldwide endeavor, and NSO is the most appropriate choice to lead these efforts. The timescale is long, with a payoff in a decade or more, so we appreciate this long vision leadership.

Other UC Remarks arising from the May 2019 UC meeting

The format for this year, with 1 day on specific items and 1/2 day on longer-term science and vision was well received by all members of the UC. This builds on the 2018 meeting report where we welcomed the “inclusion of more big-picture science research ideas, developed as part of NSO-personnel research time, in future UC meetings” and stated we would be happy to “dedicate one or more session to hearing about how the new scientific research at NSO will benefit the community.” We are keen to see a similar format for 2020.

As a follow up to this UC report, we would like to hear about the details of all the NSO presentations or open houses at SHINE, SPD, and AGU. We are happy for the Director to ask the community to send comments to the UC chair, if he feels this would be a useful exercise.