

Dr. Bernhard Fleck
SOHO Project Scientist
ESA Space Science Dept.
NASA/GSFC Code 682.3
Greenbelt, MD 20771, USA

Prof. Dr. Philip R. Goode
Director, Big Bear Solar Observatory
BBSO, 40386 N. Shore Lane
Big Bear City, CA 92314

30 December 2002

Dear Prof. Goode,

I am writing to express my strong support for your plans to upgrade Big Bear Solar Observatory with a modern off-axis, 1.6 m clear aperture telescope.

Big Bear Solar Observatory has already played a key role in SOHO coordinated campaigns; it is in fact the most frequent ground-based partner, appearing in one out of five campaigns that involve ground-based support. In addition to these dedicated campaigns, Big Bear's synoptic H α images are regularly used by the SOHO science planners for target selection.

I am convinced that the New Solar Telescope (NST) you are proposing will play an even more important role during the scientific exploitation of the new class of solar data expected from upcoming space missions such as Solar-B, STEREO, SDO, and ESA's Solar Orbiter. All these missions, and STEREO in particular, will benefit tremendously from the ultra-high resolution magnetograms and other dedicated coordinated observations NST will provide. Further, when combined with simultaneous high resolution polarimetry from the Solar Orbiter, i.e. observations from an angular perspective removed from that of the Earth, NST will allow *stereoscopic* observations of the fine structure of the photospheric magnetic field which should reveal its detailed structure *on a physical height scale, rather than an optical depth scale*. Furthermore, such stereoscopic observations should provide the velocity field components in a plane, rather than along just a line-of-sight. Such advances should place tight observational constraints for fundamental processes such as convective collapse, generation and propagation of MDH waves in flux tubes, and the nature of the weak internetwork magnetic field. The key to achieving all this is high spatial resolution, high signal-to-noise, high precision polarimetry, which requires a large primary mirror with adaptive optics.

In addition, the NST would be an ideal instrument for the education and training of the next generation of solar physicists and instrument builders, and it should also be an ideal test-bed for the NSO-led Advanced Technology Solar Telescope (ATST).

I wish you all the success with this exciting and important project.

Sincerely,



Dr. Bernhard Fleck
SOHO Project Scientist

European Space Agency
Agence spatiale européenne

SOHO Project Scientist Office

NASA/GSFC - Mail Code 682.3 - Greenbelt, MD 20771 - Tel (301) 286-2455 - Fax (301) 286-0264
E-mail: soho@esa.nascom.nasa.gov