
SIRI JODHA SINGH KHALSA

PROFESSIONAL SUMMARY

The trajectory of my career has taken me from the tropics to the poles, and from field work to satellite remote sensing to information science. My thesis work was based on turbulence measurements acquired with equipment I helped design and which I operated by myself aboard a research vessel off the coast of Africa during the GARP Atlantic Tropical Experiment in 1974. During my post-doc at the University of Hawaii I participated in the acquisition and analysis of data obtained aboard a NOAA P-3 during the Hawaii-Tahiti Shuttle Experiment. I was subsequently involved in the design and execution of additional aircraft-based experiments including the First ISCCP Regional Experiment (FIRE), the Frontal Air-Sea Interaction Experiment (FASINEX) and the Atlantic Stratocumulus Transition Experiment (ASTEX).

While a CIRES employee at the Climate Research Division of NOAA's Environmental Research Laboratories I contributed to the development of the Outgoing Longwave Radiation (OLR) dataset and customized software for retrieving atmospheric temperature and humidity profiles from data acquired by the TIROS Operational Vertical Sounds (TOVS), to use in the study of large-scale air-sea interaction.

My work with TOVS led to a collaboration with researchers at NSIDC who were studying polar atmospheres, where I produced a TOVS polar profile dataset. When NSIDC was awarded the contract for operating one of NASA's Distributed Active Archive Centers, I was invited to apply for the position of Science Liaison. Up until this time I had been funded entirely via contracts and grants, primarily from NOAA and ONR. My decision to transition to the private sector was based both on the opportunity for more stable funding as well as on the excitement to be working on NASA's Mission to Planet Earth.

While at the Science Office of the Earth Observing System (EOS) Data and Information System (EOSDIS) Core System (ECS) I acquired valuable new knowledge and skills. I visited the institutions of scientists developing instruments for the first EOS platform and made presentations describing ECS and its standards and protocols. I helped develop the data model for ECS and the toolkit that the instrument teams would use to generate products. I eventually became the manager for the Science Liaisons at all the DAACs and did the hiring for some of the positions.

When it came time for ECS to be delivered to NSIDC I returned to the University of Colorado, Boulder as a contractor and worked in that capacity for 10 years supporting the installation and testing of ECS software. During this time I again started contributing to research proposals, the first of which was the Global Land Ice Measurements from Space (GLIMS) project, which was initiated as an effort of the EOS Advanced Spaceborne Thermal Emission and Reflection Radiometer (ASTER) Science Team. My initial role was

helping to design the database to store the geospatial data on glaciers that were to be derived from ASTER imagery. I help design the software and protocols for performing the analyses that were to be done by local experts at Regional Centers around the world. I worked on GLIMS from 2003 to 2009 during which time we ran workshops, created and distributed software, wrote journal articles, technical reports and analysis guidelines.

The GLIMS project led to another initiative, Contribution to High Asia Runoff from Ice and Snow, CHARIS, a multi-disciplinary effort to use remote sensing to quantify the contributions of glacier and seasonal snow melt to water runoff in High Asia. This included training in-country partners and students from 8 High Asian countries on use of Geographic Information Systems and python notebooks to do snow melt modeling. CHARIS, which was funded by the US State Department, ran for six years and resulted in numerous publications.

In 2008 I again became a CIRES employee, supported by a mix of DAAC funding and research grants and contracts. I received awards (more than I can easily remember) from NASA to develop advanced data access and visualization tools. In 2012 I received the first of a series of grants under National Science Foundation's (NSF) EarthCube program. EarthCube was formed as a collaborative partnership between NSF's Directorate for Geosciences (GEO) and the Division of Advanced Cyberinfrastructure (ACI) to transform the conduct of geosciences research by developing and maintaining a cyberinfrastructure that improves access, sharing, visualization, and analysis of data and related resources. These grants have involved a wide circle of collaborators in different disciplines at various national and international institutions. I continue to be involved with and supported in part by NSF EarthCube.

Another track in my career began in 2004 when, as a member of the IEEE Geoscience and Remote Sensing Society (IEEE-GRSS) Technical Committee on Data Archival and Distribution, I was asked to represent the GRSS to the International Organization for Standardization (ISO) [Technical Committee 211 - Geographic information/Geomatics](#). I have served in this role ever since and have also represented the GRSS to the Open Geospatial Consortium (OGC). With the acquired experience in standards development I helped establish NASA's Standards Process Group which evolved into the NASA's Earth Science Data and Information System (ESDIS) Standards Office (ESO). The ESO currently supports 25% of my time through a supplement to the DAAC contract.

In 2016, at the request of the incoming President of the IEEE-GRSS, I formed the GRSS Standards for Earth Observations Technical Committee (GSEO TC). The GSEO has since sponsored the initiation of five standards development projects under the IEEE Standards Association. Two additional projects are under study. These projects are all related to geoscience remote sensing technologies, including hyperspectral imagers, microwave radiometers, synthetic aperture radar, global navigation satellite systems reflectometry, and radio frequency interference in protected geoscience bands.

In 2014 I was given permission to continue my work for CIRES from a remote location, namely the Czech Republic. I had been serving on the Science Advisory Board of the [Czech Global Change Research Center](#) since its formation, so when I relocated there I began

supervising, informally, a doctoral student working with thermal hyperspectral data. This involved developing a new algorithm for separating the temperature and emissivity contributions to the observed radiances. I was involved in field work, instrument calibration, data reduction and algorithm development.

Finally, I have been part of NASA's Earth Science Data Systems Working Group (ESDSWG) since its inception, as well as the multi-agency Federation of Earth Science Information Partners (ESIP). I have also been part of the international Research Data Alliance (RDA) since near its inception, and have co-chaired two RDA interest groups, one of which is still active.