Leaf Area Index for Fire Chronosequences of the Black Hills and Southern Siberia: A Comparative Study

Collaboration and Planning Meeting Contacts and Brief Notes
Meeting held 7 November, 2001, Rapid City, SD

Meeting Summary

Thanks once again to all of you for taking time a couple of weeks ago to be in Rapid City to take part in the NASA-EPSCoR LAI collaboration and planning meeting. I think that this meeting, in conjunction with the longer SD visit by Don Deering, Alexis Conley, and Nastia Kozhoukhovskaya, has set the stage for us all to do excellent collaborative work among our research groups. I have typed up a brief summary to highlight the various presenters' remarks and have compiled a list of the participants for future reference. I've also received individual comments on the meeting from a few of you, and am working now to write out the key aspects of the SD experimental and modeling plans to circulate for comment on in the near future.

Presentations (in order of their delivery):

Lee Vierling (IAS/SDSM&T):

- Presented overview of the collaborative project. Key aspects of the project will include:
  - improved estimates of leaf area index via remotely sensed observations
    - RS analyses will be performed at various scales
    - Hyperspectral and multispectral data will likely both be used
    - Nadir and off-nadir data will be used in analyses
    - Time series of data will be used to take advantage of changing phenology
    - LIDAR work will help pull out structural variability and assist in deconvolving optical data
  - measuring LAI in ways that best complement biogeochemical modeling studies
    - Differentiation between overstory LAI and understory LAI
    - Quantification of annual LAI accumulation (growth and regrowth)
  - comparing LAI/RS relationships developed for Siberian and South Dakota forests to develop sets of relationships that can be widely (universally?) applied

Alexis Conley (SSAI/NASA-GSFC):

- Presented work done in Siberia thus far:
  - Three years' worth of ground data collection, including optical and destructive sampling
  - Preliminary satellite analyses show weak correlations between NDVI and LAI—work to improve the correlations is forthcoming
  - Ground data show LAI redevelopment trends that run counter to hypothesized regrowth

Pat Zimmerman (IAS/SDSM&T)

- Provided overview of IAS resources and research focal points, including:
  - T-28 research aircraft
  - Large research tethered balloon platform
  - Modeling capabilities
  - Remote Sensing capabilities
  - Desire to use natural diversity of the Black Hills and South Dakota to study a wide range of global change/biocomplexity issues as a part of IAS and recently established SD Center for Biocomplexity

Steve Matzner (Augustana)

- Provided overview of Augustana resources/expertise in the area of plant physiology—specifically drought stress research and isotope analyses
- Numerous instruments are available through Steve to collect and analyze various samples

Bill Capehart (IAS/SDSM&T)

- Gave overview of surface/atmosphere modeling expertise
- Described "triangle" or "trapezoid" method for determining ecosystem moisture availability using NDVI and surface radiant temperature

Changhui Peng (IAS/SDSM&T)

- Described his recently-developed "TRIPLEX" biogeochemistry/forest production model, of which LAI is an output variable (preprints and reprints of this model and other work are available through Changhui).

Dan Swets (Augustana)

- Described "NDVI smoothing" work he has done in conjunction with folks at the EROS Data Center, NASA-GSFC, and Boston University
- Can help to provide "smoothed" AVHRR data for use in projects

Don Deering (NASA/GSFC)

- Described the Northern Eurasia Earth Science Planning Initiative (NEESPI) detailing potential future collaborative work and large multi-disciplinary research efforts in Siberia
- Ecological and sociological dimensions will both be a part of NEESPI to understand the potential for the Siberian boreal system to change
- Planning meeting will occur Feb 19-22, 2002 in Moscow
- Potential exists for SD researchers to become part of NEESPI

Meeting Participants, Contact Information, and Research Interests

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