SPARC Project on Fine Scale Atmospheric Structures and Processes

Vision:

- Improve understanding of fine-scale atmospheric structures and processes.
- Study phenomena with vertical dimensions smaller than 1-km: gravity waves, turbulence, tropopause, planetary boundary layer.
- Realize full potential of high-resolution sounding data.

History:

- Since 1950s, radiosonde data have been reported at lower resolution than observed (mandatory and significant levels only).
- SPARC-led efforts have resulted in availability of US high vertical-resolution radiosonde data.
- Availability of these data and subsequently GPS RO sounding data has enabled new results on gravity wave, tropopause structures, turbulence structures and planetary boundary layer morphology.

Status:

- US high-resolution radiosonde data has been available through the SPARC Data Center at Stony Brook University since 2000.
- Large and growing international community of data users developing a growing set of research applications beyond what was originally envisioned.
- New institutional arrangements are being sought (e. g., NCAR and NCDC, other possibilities?) for continued archiving and future expansion of data access (e.g. data from other nations and research campaign data).

Proposed Activities

- Advocacy and guidance for High Vertical Resolution Sounding Data Archive (details tbd).
- Advocate for improved access to international high vertical resolution sounding data and for operational distribution of high vertical resolution radiosonde data.
- Promote scientific investigations through workshop, coordinated communications: newsletters, wiki, etc.
- Enable collaborative publications, reviews, regional studies.

Deliverables

- Publication (e.g., BAMS) on new science emerging from analysis of high resolution sounding data (within one year).
- Facilitate access to climatological turbulence parameters.
- Special journal issue (three years).

Links

- Other WCRP projects, GCOS (GUAN, GRUAN), WMO (CIMO, CBS, CAeM), IGRA.