

ISSI Mars PBL Meeting 16 April 2009

(1) Review existing PBL model schemes used by Mars and Earth communities

[AP, BG, HS, AS, SRL, PLR]

- Which models are out there? [Global, mesoscale, microscale]
- What schemes do they use?
- Identify representative schemes to use for intercomparison

(2) Review of observations of Mars PBL

[TS, SL? HS, AM, AS, SRL, PLR, NR?]

- Existing and upcoming
- Types of observations [in situ, remote sensing (surface or from orbit)]
- Location/terrain, season, diurnal coverage, spatial and temporal resolution, pointwise or profiles
- Boundary or surface layer coverage?
- Identify representative cases for intercomparison

(3) Outputs

- Review article(s)
- Technical report
- Executive summary
- Press release
- Decadal survey? [July 2009]

REVIEW ARTICLE/TECHNICAL REPORT

- Introduction to atmospheric boundary layers [Arakel Petrosyan]
Monin-Obukhov theory
- Overview/Comparison of Earth and Mars (and other planets?) PBLs [Soeren Larsen]
- Observations of Mars PBLs [Tero Siili]
What is known about the Mars PBL from measurements
- Turbulence Models of Mars PBL [Boris Galperin]
 - Bulk & mixing length parametrized models of Mars PBL [Hannu Savijarvi]
 - TKE closures of Mars PBL [Boris Galperin]
 - Large Eddy Simulation of Mars PBL [Aymeric Spiga]
- Role of PBL in wider atmospheric circulation [Stephen Lewis]
 - Fluxes of heat, momentum, moisture, dust etc.....
 - Large-scale friction
 - Weather and climate timescales
 - Mission planning/forecasting
- Conclusions [Peter Read]
 - What have we learnt about Mars PBL?
 - What does Mars tell us about the Earth PBL?
 - What do we need from future missions?
 - What do models need to do better?

Timeline:

1st drafts of each section by mid-August to be sent to Arakel P.

- default format should be Latex using AGU stylefiles where possible.

Review article(s) - published in Space Science Reviews in first instance - possibly republished by ISSI as a book?

- Model intercomparison study [AM/AS?]

- Separate publication???

- Decadal Survey

- PLR to act as coordinator.

- Draft template circulate to rest of team, inviting inputs [promised from SL, BG, LV...?]

- Respond to Mike Mischna in first instance (by mid-July, mature draft by end-June).