NOTE: Each presenter is asked to prepare a 45 minute presentation, tutorial in nature. Each speaker will also be asked to provide key current science questions at the end that can be distilled and mapped to field projects. There will be 15 minutes of discussion after each lecture.

**MONDAY: TTL Structure, past observations, historical perspective**

Bus leaves hotel at 8:30

9:00-9:30 Introduction and logistics, motivation and scope of meeting.
9:30-10:15 Introduction of participants
10:15-10:45 Group Photo & Break
10:45-11:45 *TTL Overview / Radiative Transfer* **Andrew Gettelman**

11:45-1:00-LUNCH

1:00-2:00 *Cirrus Clouds and Convection in the TTL* **Leonard Pfister**
2:00-3:00 *Water Vapor* **William Randel**
3:00-3:30 Break
3:30-4:30 *TTL Transport & Wave Processes* **Masatomo Fujiwara**
4:30-5:30 *Trace Species and Chemistry (Besides Water)* **Anne Thompson**

**TUESDAY: Critical outstanding TTL questions**

Bus leaves hotel at 8:30

9:00-10:00 *Stratospheric Dynamics (Including Waves)* **Joan Alexander**
10:00-11:00 *In-Situ Aircraft Observations* **Karen Rosenlof**
11:00-11:30: Break
11:30-12:30 Ground Based Observations **Fumio Hasebe/Takashi Shibata**

12:30-1:30 LUNCH

1:30-2:30 *Satellite Observations* **Masato Shiotani**
2:30-3:30 *Simulations (Idealized to Global)* **Eric Jensen**
3:30-4:00 Break
4:00-5:00 *Data Assimilation* **Kazuyuki Miyazaki**
5:00-5:30 Poster Introductions
5:30-7:30 Poster Session / Reception
WEDNESDAY: Observational plans for 2012-2015, Discussion

Bus leaves hotel at 8:30

9:00-9:15  Presentation of science questions Organizing Committee

Presentations by representatives for individual observational campaigns. Each speaker will be asked to be sure to present (a) science questions, (b) key instruments and (c) locations and timing

9:15-10:30  Ongoing Project Focus
  - GRUAN Holger Vömel (Remotely)
  - NOAA Dale Hurst
  - Ticosonde Henry Selkirk
  - SHADOZ Anne Thompson
  - SOWER Fumio Hasebe

10:30-11:00  Break

11:00-12:20  Campaign Focus Focus
  - ATTREX Eric Jensen
  - BATTREX Gary Morris/ Joan Alexander
  - CAST-Aircraft Neil Harris (10 min)
  - CAST-Sonde Geraint Vaughan (10 min)
  - CONTRAST Laura Pan
  - AerOClim Markus Rex

12:20  Adjourn formal session

Afternoon: Free for most participants.
For students: prepare synthesis presentations for Thursday in 3 small groups.
More information to be presented at the workshop.

THURSDAY: TTL measurements and modeling mapped to questions

Bus leaves hotel at 8:30

9:00-12:30:  Current TTL science topics. (3 hours of short talks, plus 0.5 hour break)

List of Talks:

9:00-9:20 Thomas Birner: Quantifying the deep convective temperature signal within the tropical tropopause layer (TTL)

9:20-9:40 Noriyuki Nishi: Cloud-top height dataset by geostationary satellite split window measurements trained with CLOUDSAT data

9:40-10:00 Masahiko Hayashi: Volatility and composition of TTL aerosols by balloon-borne in-situ observation
10:00-10:30 Break

10:30-10:50 **Nawo Eguchi**, Kodera & Nasuno: *Impact of abrupt stratospheric dynamical change on Tropical Tropopause Layer*

10:50-11:10 **Kensaku Shimizu**: *Development of new HYdorometer Video Sonde (HYVIS) system for ice cloud observation in TTL region*

11:10-11:30 **Jianchun Bian**: *In situ water vapor and ozone measurements in Lhasa and Kunming during the Asian summer monsoon*

11:30-11:50 **Karen Rosenlof**: *The NOAA H2O and O3 data base*

11:50 -12:10 **Shinya Ogino**: *Ozone variations over the Northern subtropical region revealed by ozonesonde observations in Hanoi*

12:10-12:30 **Laura Pan**: *Identification of TTL boundaries using the ozone-water vapor relationship*

12:30-1:30 LUNCH

1:30-2:30 Summary of science questions from Monday-Wednesday - Talks led by student groups. 20 min per group on science topics.

2:30-3:00: Discussion of science questions

3:00-3:30 Break

3:30-4:30 Campaign Logistics mapping presentation by students. Discussion

4:30-5:30 - Plans for coordinated observations.

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**FRIDAY: Coordination and planning. Action items and future work**

Bus leaves hotel at 8:30

9:00-10:30 Discussion of synergies and where we can work together (led by Organizers)

10:30-11:00 Break

11:00-11:30 Discussion of observations/Models and gaps – Discussion – What’s missing in current plans? Do campaign proposals address the missing elements?

11:30-12:00 Review science questions, and how to use coordinated observations

12:00-12:30 Action Items: common activities, critical planning needed, etc.

12:30 End workshop

PM: Organizing committee drafts white paper.