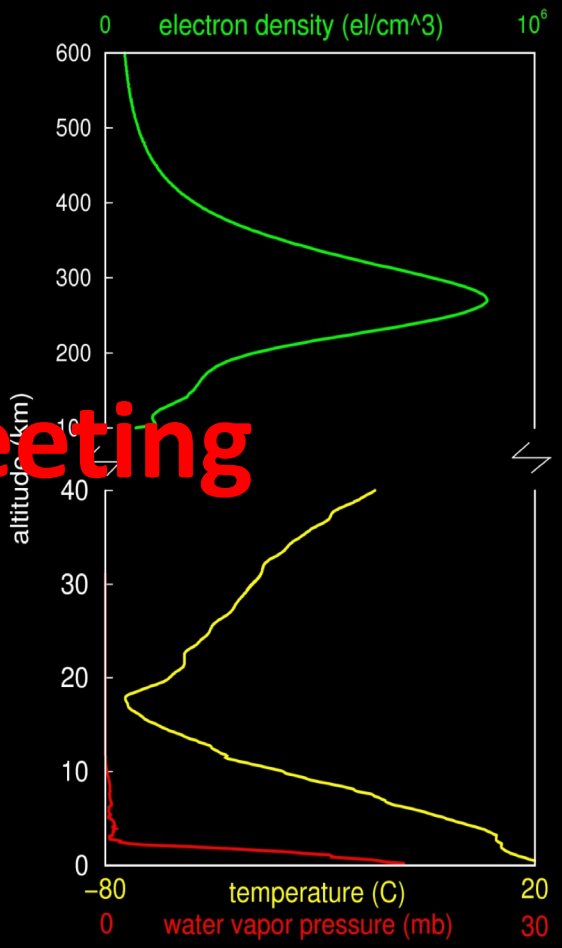
GPS



STAR RO Group Meeting

Shu-peng Ben Ho

2020/03/04

1. Group structure and the current STAR RO processing

2. Current status of the COSMIC-2 and CWDP projects

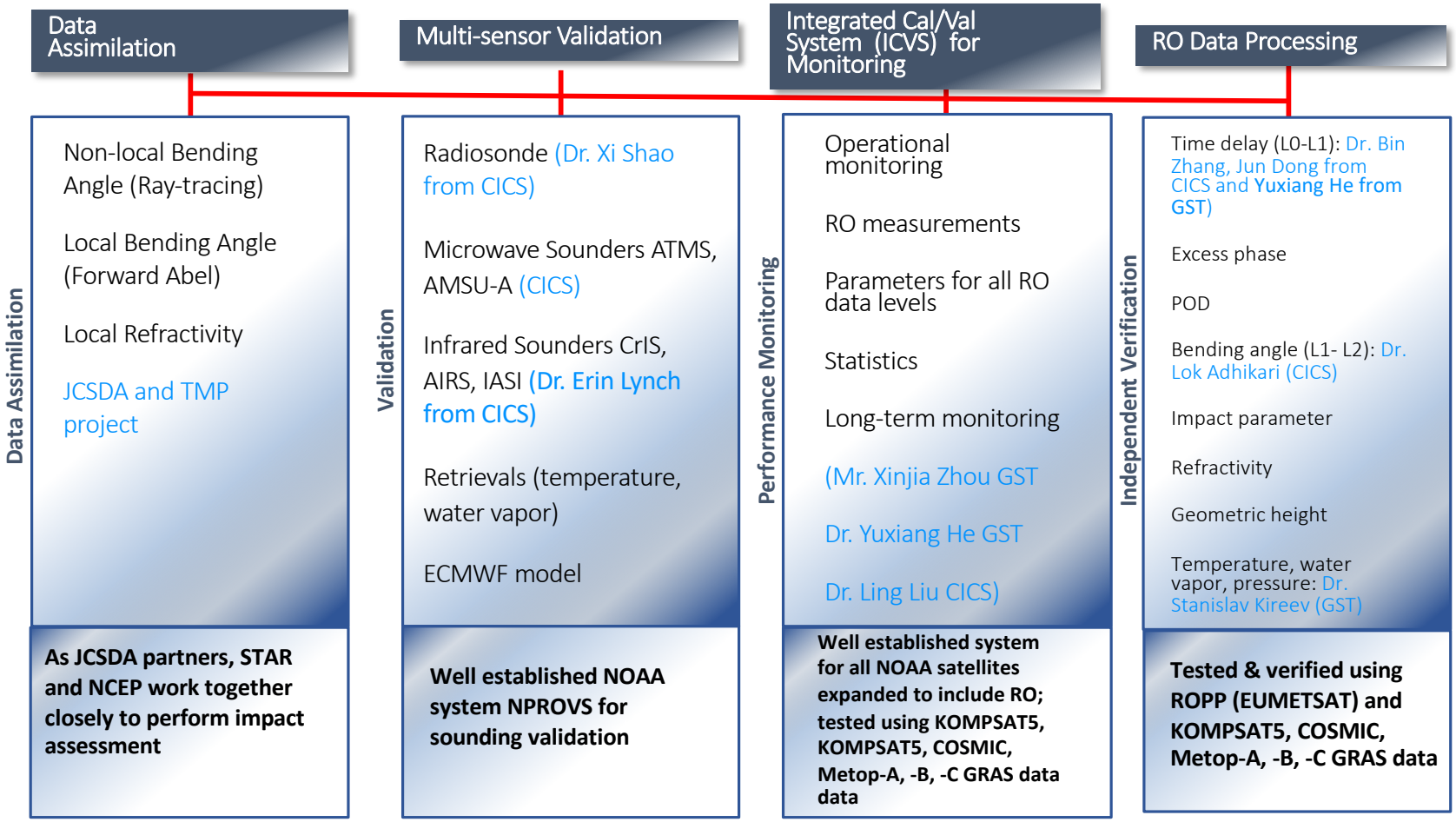
3. Potential COSMIC-2 papers to be submitted

4. Near term meetings
- COSMIC-2 Taiwan meeting

5. Other projects including L3 data products:
- SPARCS, GRUAN, GCICS (RO temperature validation/calibration): Bin (MW) and Xi (RAOB temperature, IR)
- G-VAP (RO water vapor and RAOB water vapor) : Xinjia
- RO L3 data products : Xinjia and Yuxiang
- EPS-SG : Erin
- HIRS T12 UTH : Xi
- MiRS and NUCAP : Stan

1. group structure and the current STAR RO processing

STAR has been developed as a GNSS RO processing and research center. Four major focus area of STAR RO data processing and validation are defined :



Four major focus areas of Cal/Val work have been defined

1) RO experts in RO processing, sciences, and applications
2) Internal website

- RO lessons
- Group current and past publications
- Meeting Presentations/posters
- All RO related publications

3) SOW and expectations
4) Among other centers and within NOAA

2. Current status of the COSMIC-2 and CWDP projects

1) Current Status of COSMIC-2 project

See the attached ppt

2) Current Status of COSMIC-2 project

See the CWDP report

3. potential COSMIC-2 papers to be submitted

1) Recent submitted papers

1) Steiner, A. K., F. Ladstädter, C. O. Ao, H. Gleisner, **S.-P. Ho**, D. Hunt, T. Schmidt, U. Foelsche, G. Kirchengast, Y.-H. Kuo, K. B. Lauritsen, A. J. Mannucci, C. Marquardt, J. K. Nielsen, W. Schreiner, M. Schwärz, S. Sokolovskyi, S. Syndergaard, A. von Engeln, J. Wickert, Consistency and structural uncertainty of multi-mission GPS radio occultation records, AMT (accepted).

2) Schröder, M., R. Bennartz, **S.-P. Ho,** Using GPS RO data as on-orbit references to calibrate Temperature in the Lower Stratosphere obtained from Satellite Microwave Sounders: Recent Results, GEWEX News letter (in press).

3) Von Engeln, X., H. Gleisner, **S.-P. Ho**, A. Stanier, H. IPCC AR5 GPS RO section. (submitted).

4) Mears C., **S.-P. Ho**, H. Huelsing, and X. Zhou, 2020: Total Column Water Vapor, [In "States of the Climate in 2019]. *Bul. Amer. Meteor. Sci.*, **98** (8), S24-S25, doi:10.1175/2020, BAMS State of the Climate (in press).

5) Vinay Kumar; S. B. Surendra Prasad; K. Krishna Reddy; S. K. Dhaka; R. K. Choudhary; M. Venkatarami Reddy; **Shu-Peng Ho**, 2019: Temperature perturbations in the troposphere and lower stratosphere over a semi-arid region during the 2010 solar eclipse, PAAG-D-19-00515.

6) Li, ying, G. Kirchengast, B. Scherllin-Pirscher, M. Schwaerz, J. K. Nielsen, T.-K Wee, **S.-P. Ho**, and Y.-B. Yuan, A new algorithm for the retrieval of atmospheric profiles from GNSS radio occultation data in moist air and cross-evaluation among processing centers, Remote Sensing (Accepted).

7) Steiner, A. K., F. Ladstädter, C. O. Ao, H. Gleisner, **S.-P. Ho**, Observed temperature changes in the troposphere and stratosphere from 1979 to 2018, J. of Climate (accepted)

2) potential COSMIC-2 papers to be submitted
Papers in preparation

1) Ho, S-.P, et al., 2020: The precision and accuracy of COSMIC-2 data: the early results, Remote Sensing.

2) Adhikari L., and S.-P. Ho, 2020: FSI inversion package for processing COSMIC-2 data, Remote Sensing.

3) Zhang B., et al., COSMIC-2 L1a-L1b processing.

4) Kireev, S. and S.-P. Ho, 1dvar water vapor inversion using COSMIC-2 RO refractivity, Remote Sensing.

5) Shao X. et al., GeoOptics paper

6) Erin ?

4. near term meetings

- **COSMIC-2 Taiwan meeting : Taiwan 2020/05**
- **SPARCS meeting : May**
- **G-VAP meeting : Oct.**

- **COSMIC-2/IROWG meeting: VA, 04/2021**

5. Other projects including L3 data products:

SPARCS, GRUAN, GCICS (RO temperature validation/calibration): Bin (MW) and Xi (RAOB, IR)

G-VAP (RO water vapor and RAOB water vapor project) : Xinjia

RO L3 data products : Xinjia and Yuxiang

EPS-SG : Erin

HIRS T12 UTH : Xi

MiRS and NUCAP : Stan

RO TMP project with JPL : Lok