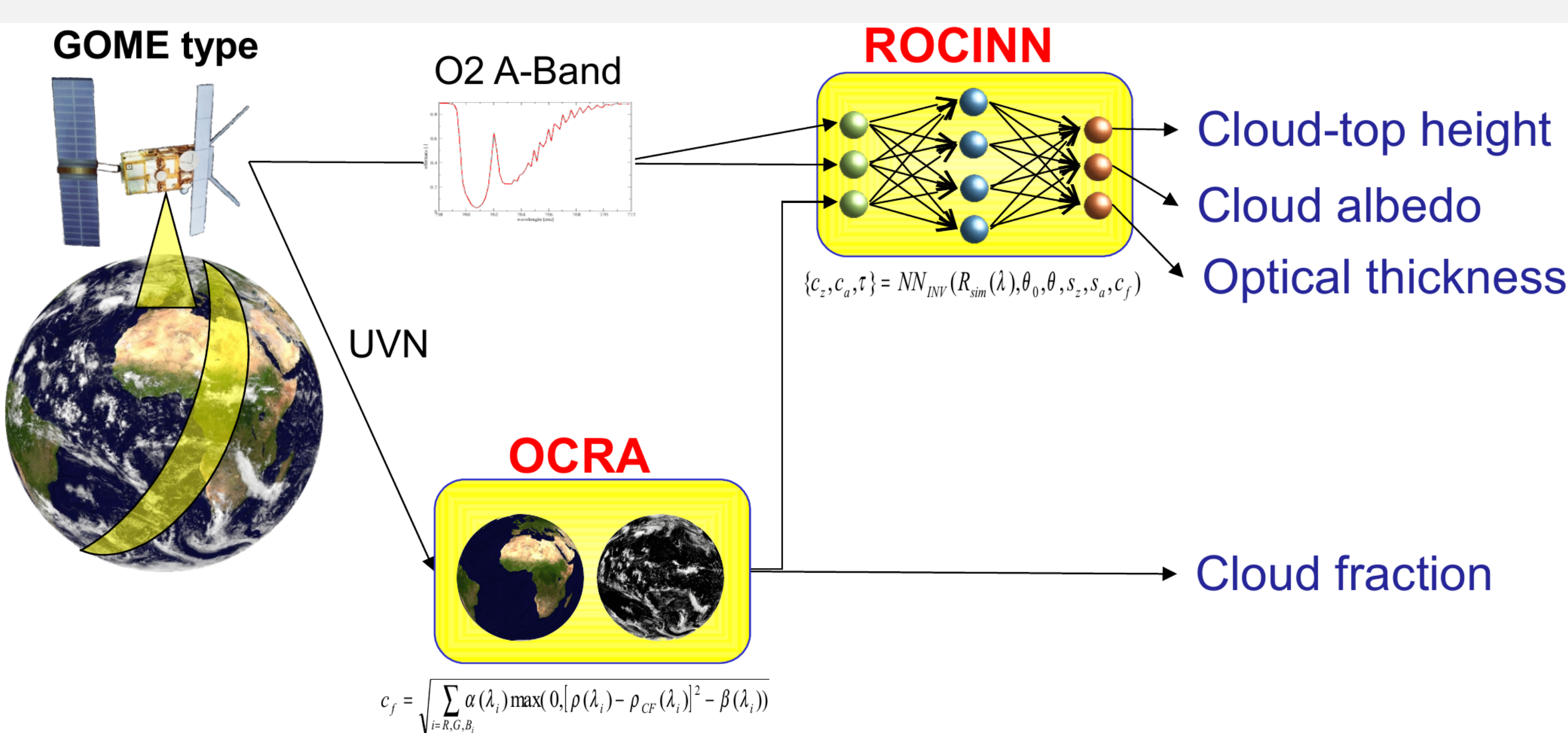


## Introduction

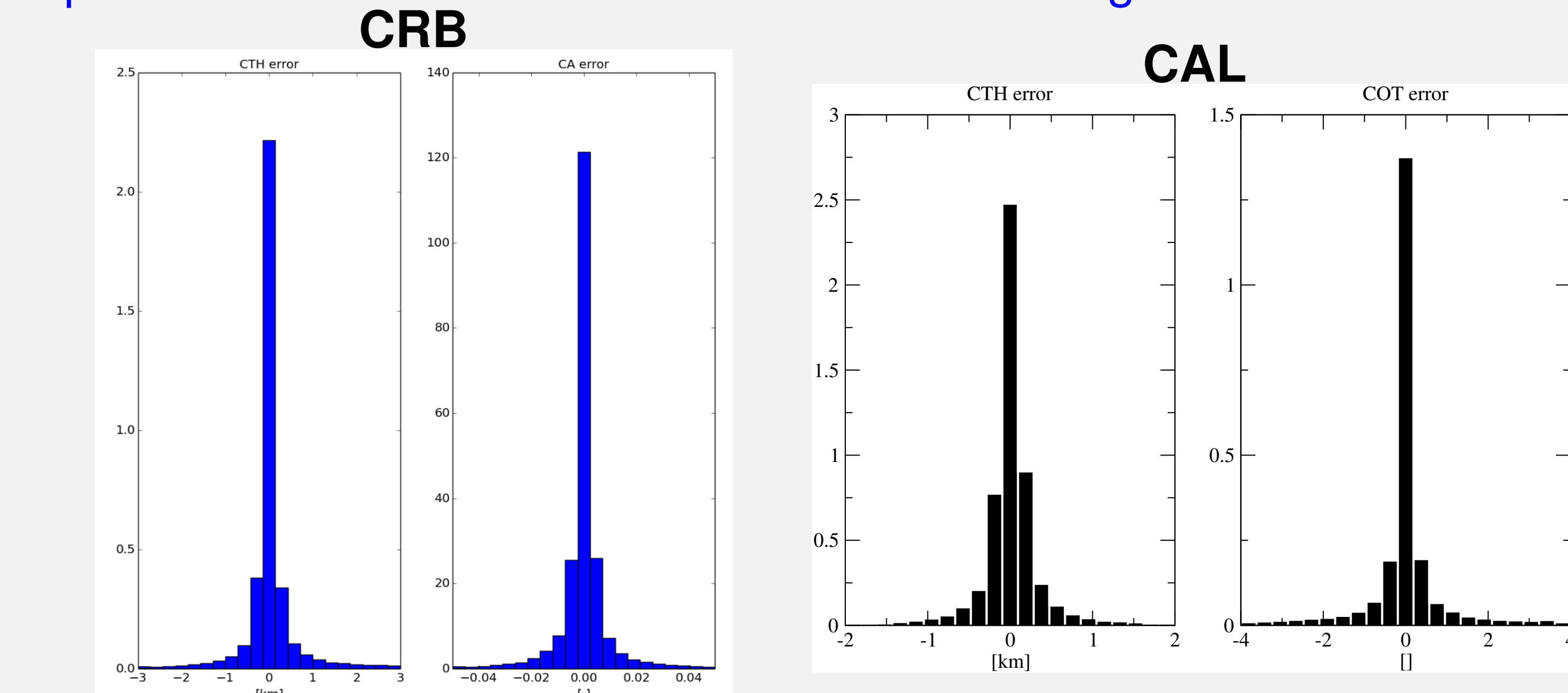
- Precise cloud information is mandatory for accurate trace gas retrievals
- OCRA–ROCINN cloud retrieval algorithms operational for GOME2 on Metop-A and -B and GOME on ERS-2
- OCRA: Optical Cloud Recognition Algorithm**
  - Cloud fraction retrieval using a RGB color space approach
  - Main improvements (see R. Lutz presentation 24.09.!)
    - New corrections for PMD instrumental degradation
    - New sun-glint flagging and removal
- ROCINN: Retrieval Of Cloud Information through Neural Networks**
  - Retrieval of cloud height (CH), cloud albedo (CA) and cloud optical thickness (COT)
  - Two versions of the algorithm:
    - CRB: Clouds as Reflecting Boundaries**
    - CAL: Clouds As scattering Layers**
  - Main improvements
    - New corrections for O<sub>2</sub> A-band instrumental degradation
    - New inversion scheme: Tikhonov regularization

## OCRA–ROCINN cloud retrieval algorithm



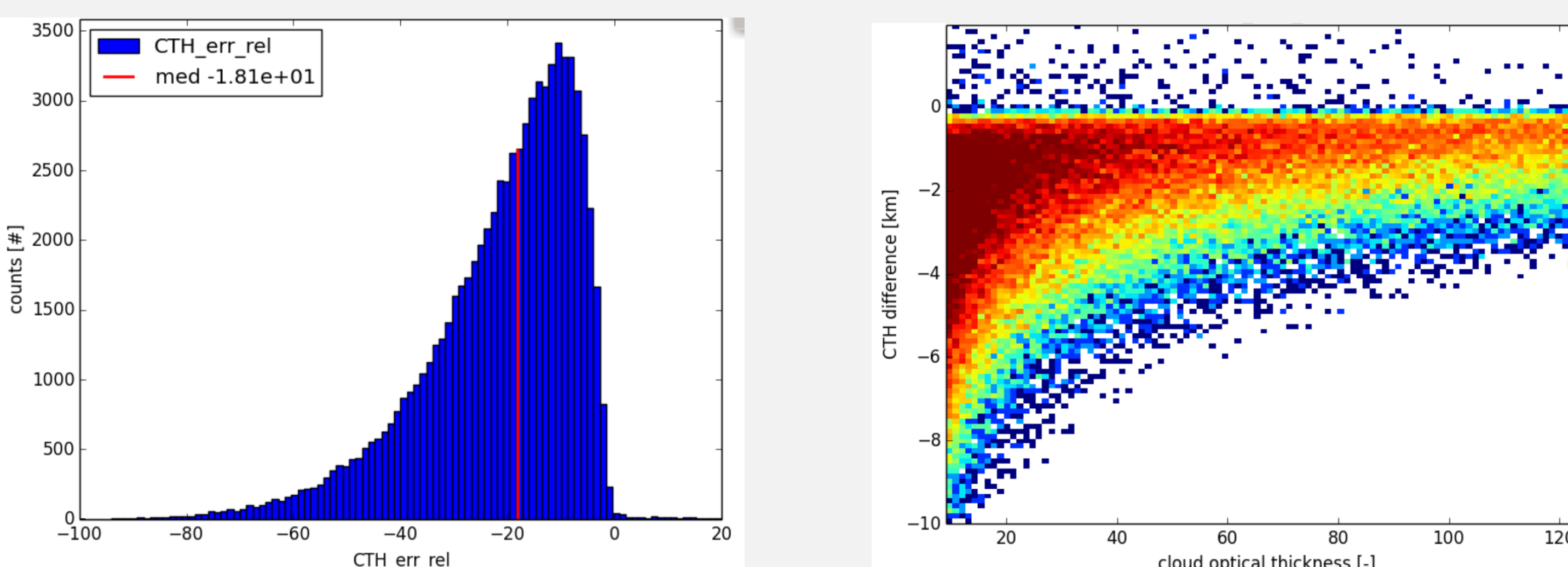
## ROCINN CRB & CAL

- performance of the ROCINN-CRB and -CAL algorithms



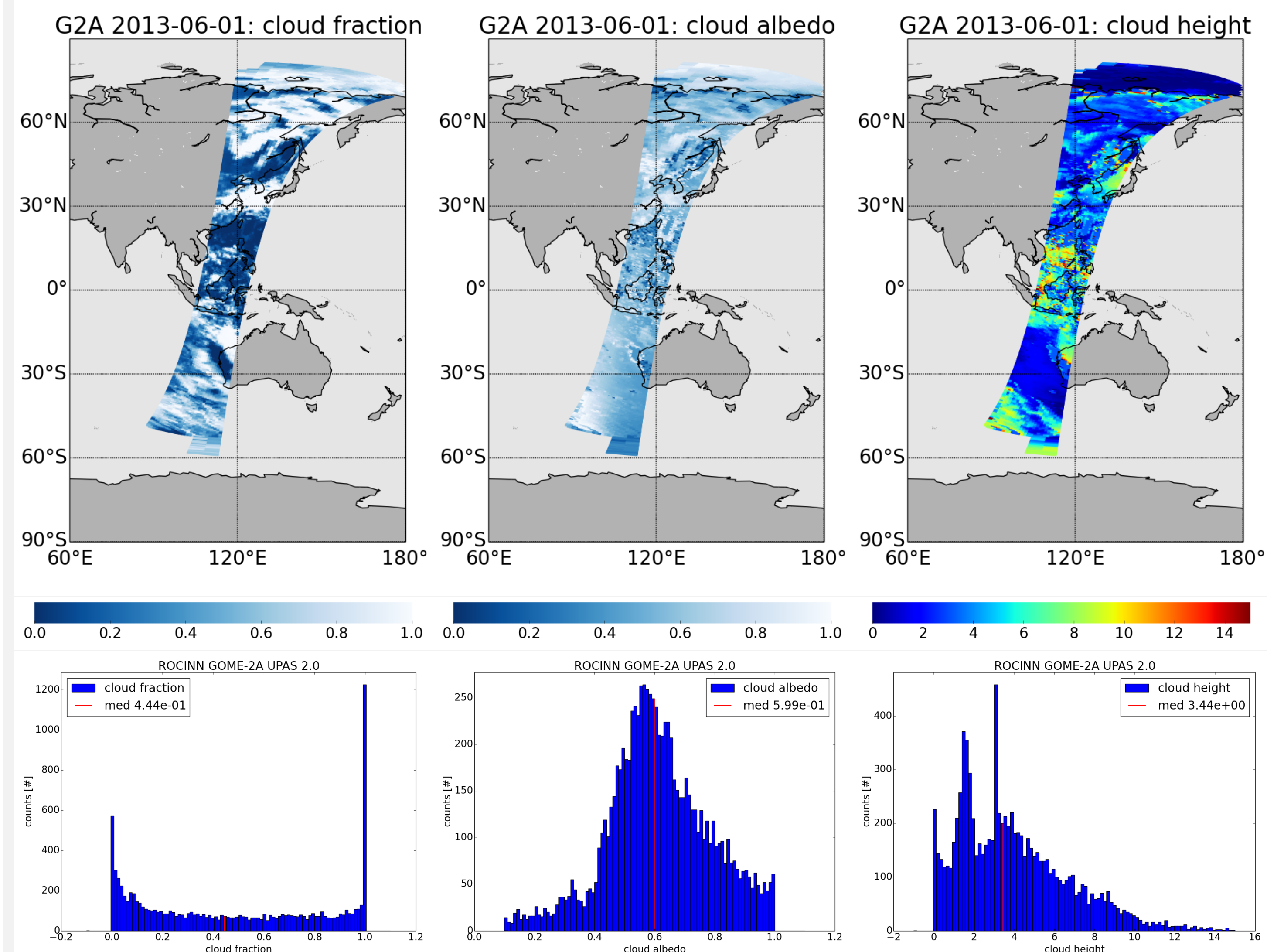
- Small errors in CH, CA and COT with synthetic data

- ROCINN-CRB vs. ROCINN-CAL**



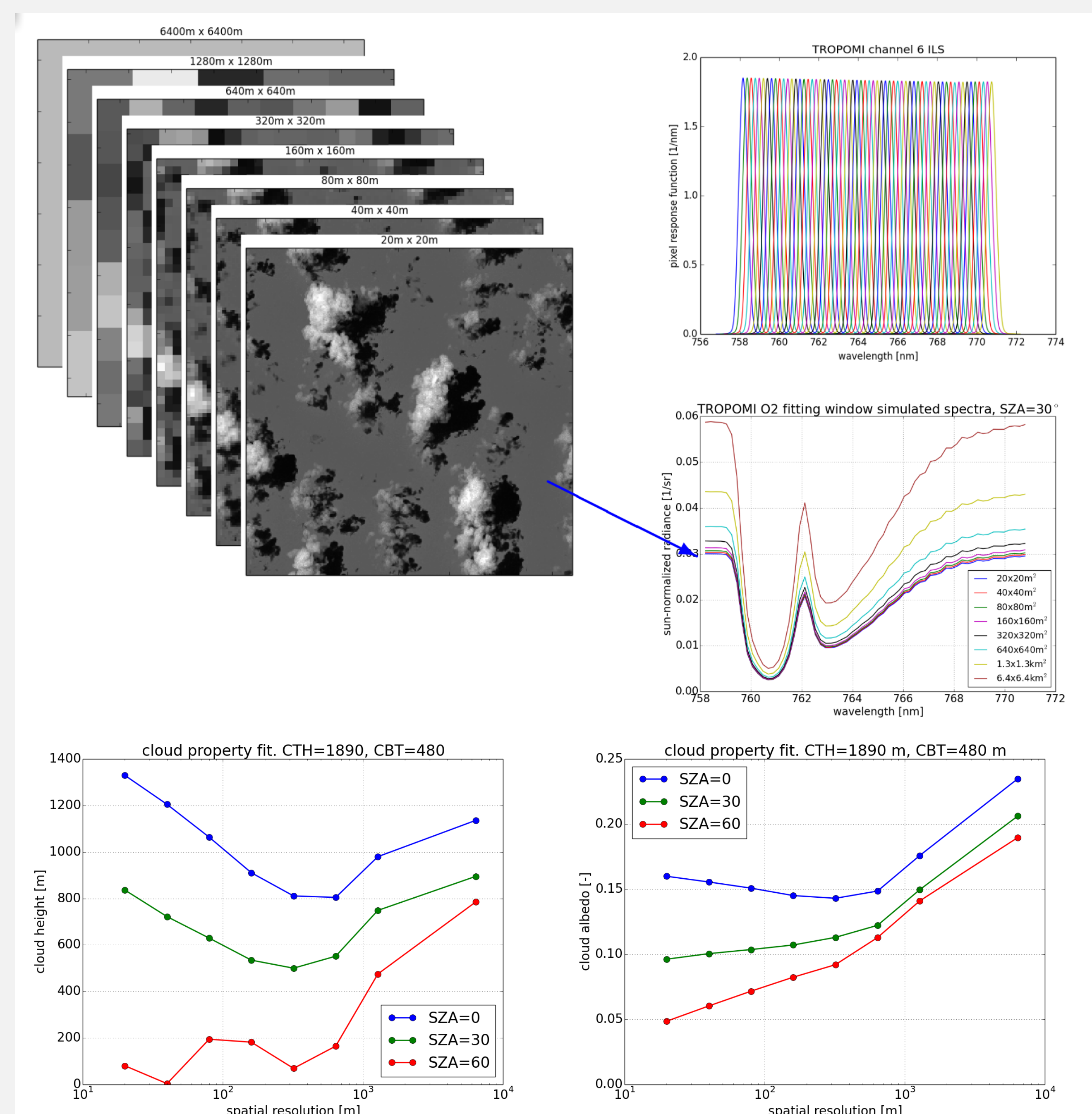
- CRB systematically underestimates cloud height (as expected)
- Discrepancy increases as cloud optical depth decreases

## GOME-2A ROCINN cloud products



- New OCRA–ROCINN algorithm corrects most of the issues in current version (mainly, degradation correction and regularization)
- Validation by comparison with independent data ongoing

## Inside-pixel variability



- Spatial resolution impacts modeled radiances
- CA increases for decreasing spatial resolution
- CH well below geometrical cloud top height

## Conclusions

- Significant improvements in the OCRA–ROCINN retrieval algorithm
- The ROCINN algorithm performs well for synthetic as well as for real GOME2 data
- ROCINN-CAL treats clouds more realistically than ROCINN-CRB
- Improvement in trace gas retrievals using ROCINN-CAL expected
- Studies on the effects of non-resolved variability ongoing