Radiation Validation and Recommendations

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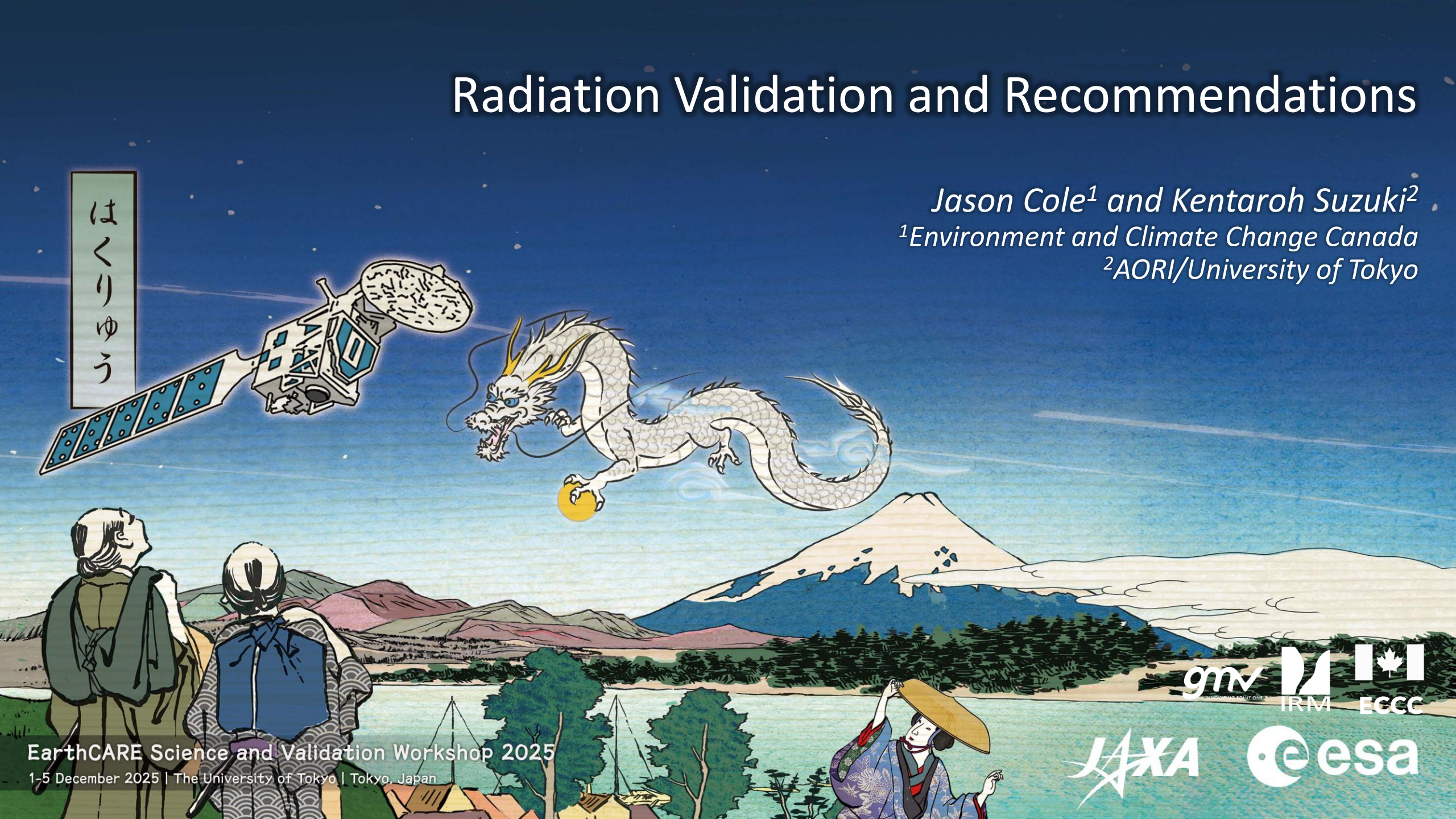

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Validation

Radiation observations (BMA-FLX)

- Compared with in-orbit observations (Velazquez)
  - Fluxes with CERES, GERB and MTG
- Directly benefits from L1 validation (Clerbaux)
- Aircraft based radiometer comparisons (Ehrlich)

Radiation computations and radiative closure

- Aircraft based verification using spectrometers (Ewald; Kouklaki)
- Surface verification using broadband and spectral in solar and in thermal (Papachristopoulou, Huang)
- Scene reconstruction (Qu)
- Independent computation of EarthCARE products and RT “chain”
  - Independent scene reconstruction (Foley; Bozzo; Tsekeri)
  - Computing TOA fluxes using EarthCARE inputs (Svendby; Tsekeri; Ezaki)
    - Verifying ACM_RT and ALL_RAD 1D and 3D radiative transfer products

Recommendation

Recommendations for radiation algorithms

- Sensitivity to particle characteristics (optics)
  - Clouds (ice habits)
  - Aerosols (dust)

Recommendations for radiation validation

- More extensive surface radiation validation
- Airborne radiometer validation could be useful for ACM_RT and ALL_RAD (similar quantity)
  - Overflights of surface radiometers would be great
- Function of scene classification, e.g., cloud fractions, cloud types, surface types
- Sensitivity analysis useful, e.g., cloud and aerosol specification
  - Keeping in mind, consistency of retrievals with forward radiative transfer (1D vs 3D)
- Potential coordination of validation to set of frames/orbits to evaluate chain to RT
  - Scene reconstruction (ECALOT flight, future flights)
  - Radiative transfer