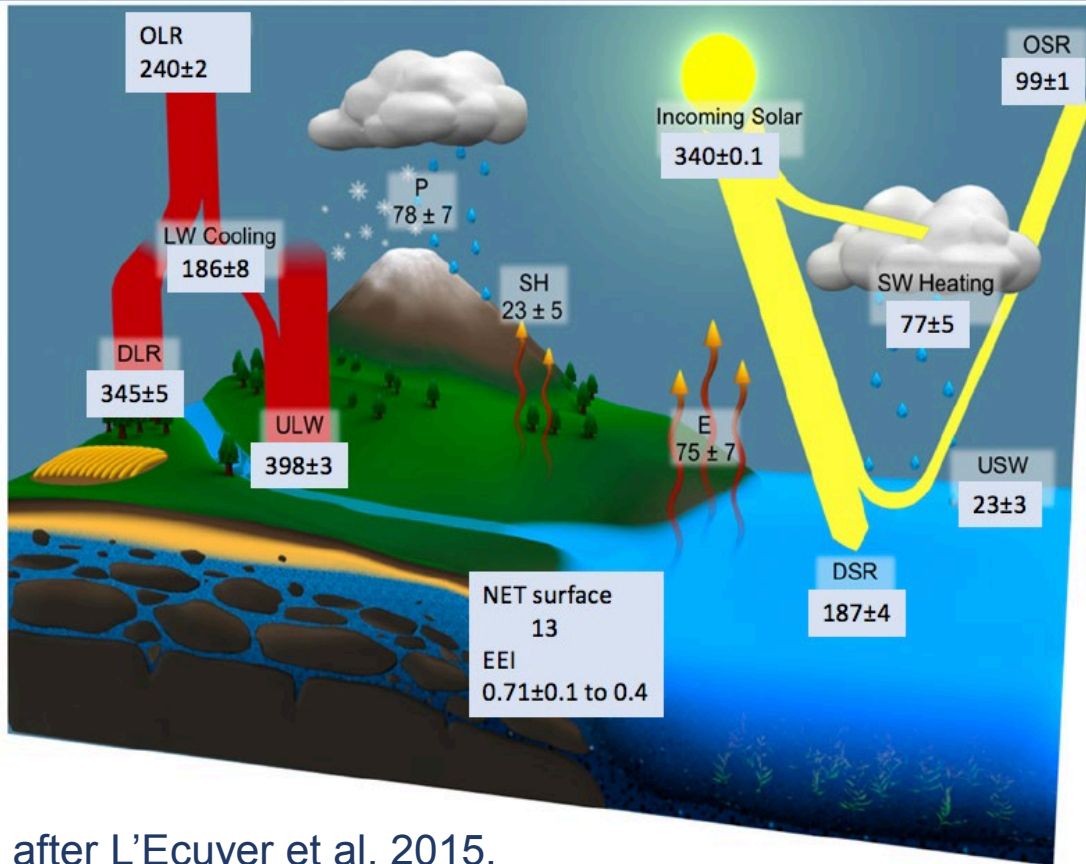


# Scoping for the GCOS Joint Panels Meeting

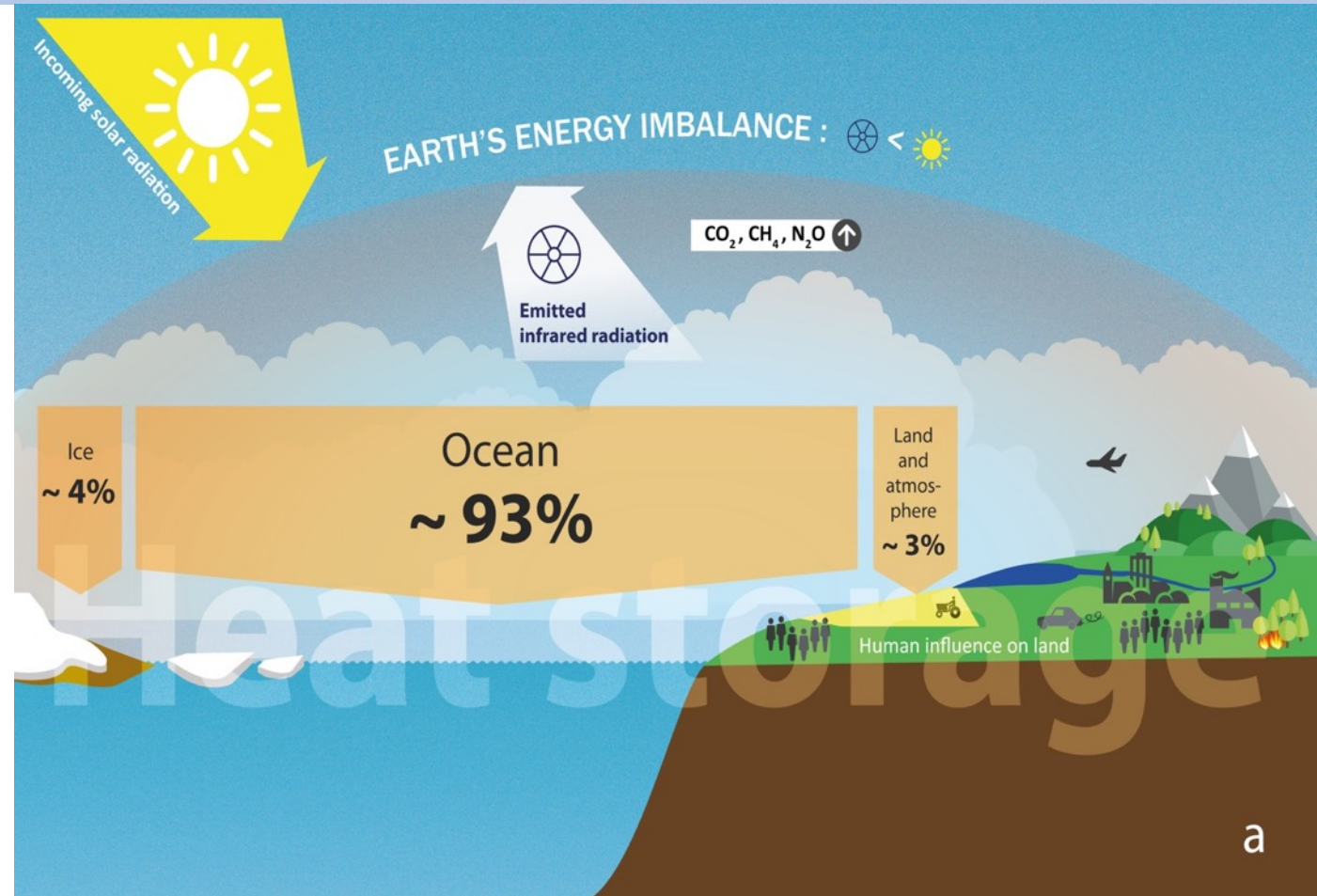
## The Global Energy Budget: Outcome breakout discussion



# Earth Energy Budget closure: an integrated way forward



after L'Ecuyer et al. 2015,  
updated based on Loeb et al. 2018 and Kato et al. 2018



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1. Global observations for the Earth surface budget: state of the energy cycle
2. Global observations for Earth's Energy Imbalance: accumulated heat in the Earth system and its implications

# Earth Energy Budget: an integrated way forward

## Outcomes of breakout discussion

AOPC; OOPC and TOPC to provide input to the scoping paper on energy (help on surface budget, atmosphere, land and cryosphere ECV recommendations (EEI inventory)); : GCOS secretary to take to panels,

Establish link between GCOS to WCRP synergy community:

- Contribution of surface flux work as done under OceanOBs / GCOS for the special issue (outcome of WCRP paper): will be discussed air-sea flux discussion tomorrow)
- Information from WCRP that community should submit a 'proposition of continuation' of C-H: GCOS community agreed to support through expertise contribution
- Agreement to contribute to other scientific papers, for example on the EEI inventory (e.g. added expertise from GCOS on atmospheric, land and cryosphere storage)
- Link to model community? → established through Toulouse workshop, but role of GCOS?
- Reanalysis inter-comparison projects: recommendation for ORA-IP to continue, and extent also to atmospheric reanalyses
- Address discussions on the time-scales: different observing system recommendations for different timescales
- **IMPORTANT:** Move away from global focus only, and address questions also at regional scale, e.g. important to include heat re-distribution (transports atmos. & ocean; regional budget)
- Continue increase scientific understanding, knowledge and tools through the physical budget constraint approach, and address implications of changes in the energy budget
- OOPC workshop on heat and freshwater as next 'milestone' for a wrap-up on actions taken under GCOS?