

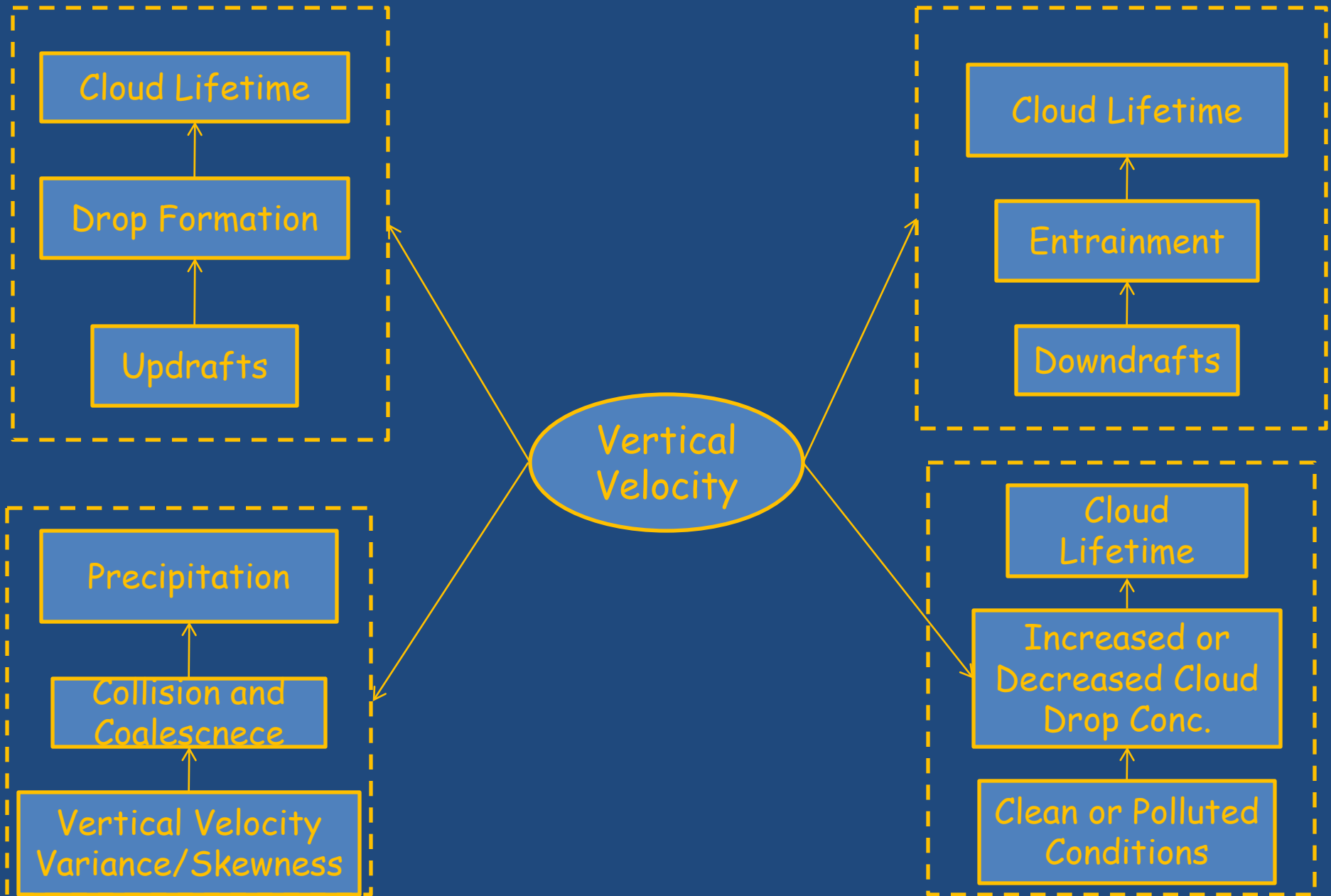
# Vertical Velocity in Liquid Phase Clouds

Virendra Ghate and Edward Luke

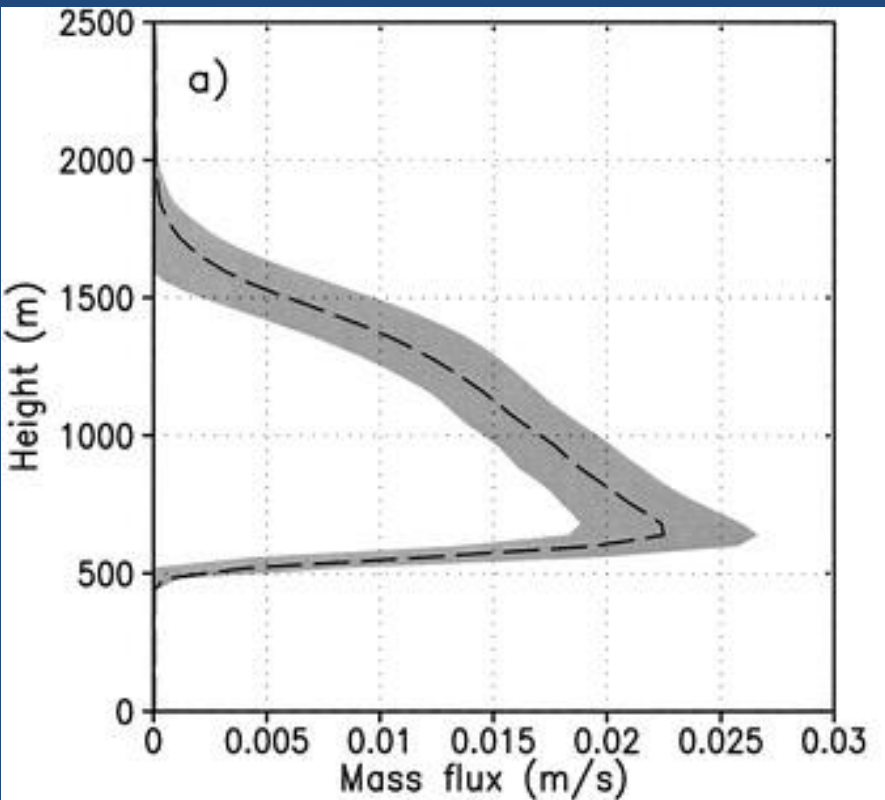
# Need for Vertical Velocity

ASR will pursue multiple research fronts towards better understanding vertical air velocity, its relation to the buoyancy forces and the associated dynamical-microphysical interaction.

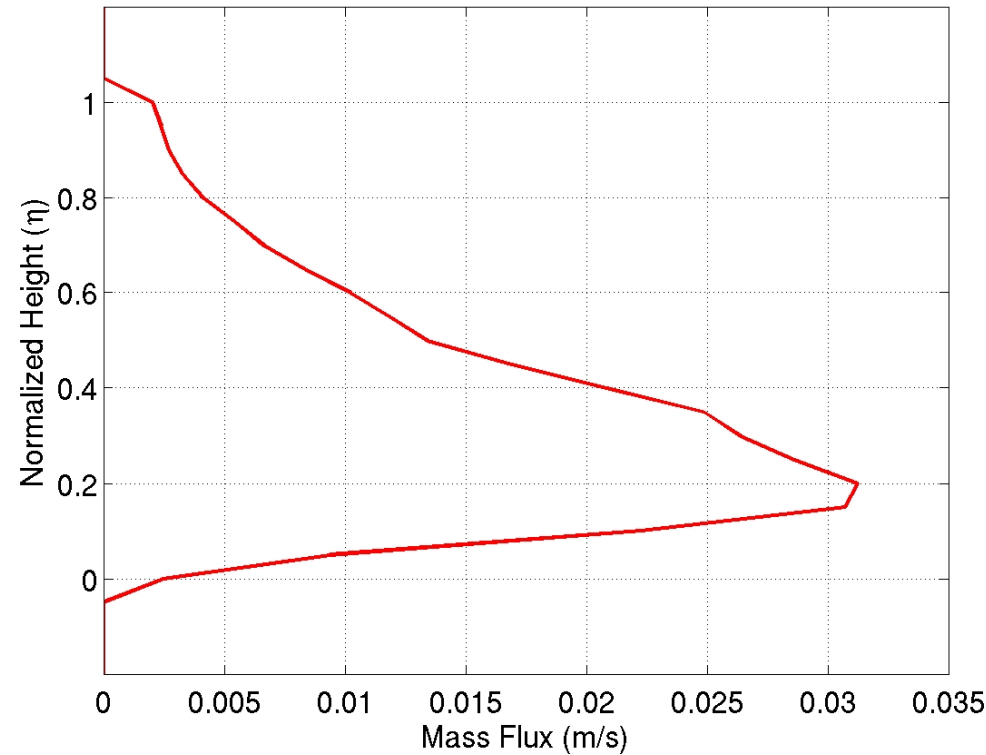
-ASR Science Plan



# Mass-Flux of Non-precipitating trade wind cumulus clouds



Ensemble of 10 LES Models  
GCSS, BOMEX Case  
Siebesma et al. 2003



Radar Observed at  
AMF1-Graciosa

# Stratocumulus Retrievals

	Non-precipitating	Lighter Drizzle Z_driz < -20 dBZ	Heavier Drizzle Z_driz > -20 dBZ
Air velocity	✓ direct	✓ new	? new
Spectrum Width	✓ direct	✓ new	? new
Cloud LWC	✓ mature	✓ new	? new
Cloud reflectivity	✓ direct	✓ new	? new
Cloud Modal Radius	✓ mature	✓ new	? new
Drizzle Drop Conc.	NA	✓ new	✓ mature
Drizzle DSD Width	NA	✓ new	✓ mature
Drizzle Modal Radius	NA	✓ new	✓ mature
Drizzle LWC	NA	✓ new	✓ mature
Eddy diss. rate	✓ mature	✓ new	✓ mature
Drizzle liq. flux	NA	✓ new	✓ mature