

Genesis of Cloud Streets and Convection over Pristine Amazon Forest

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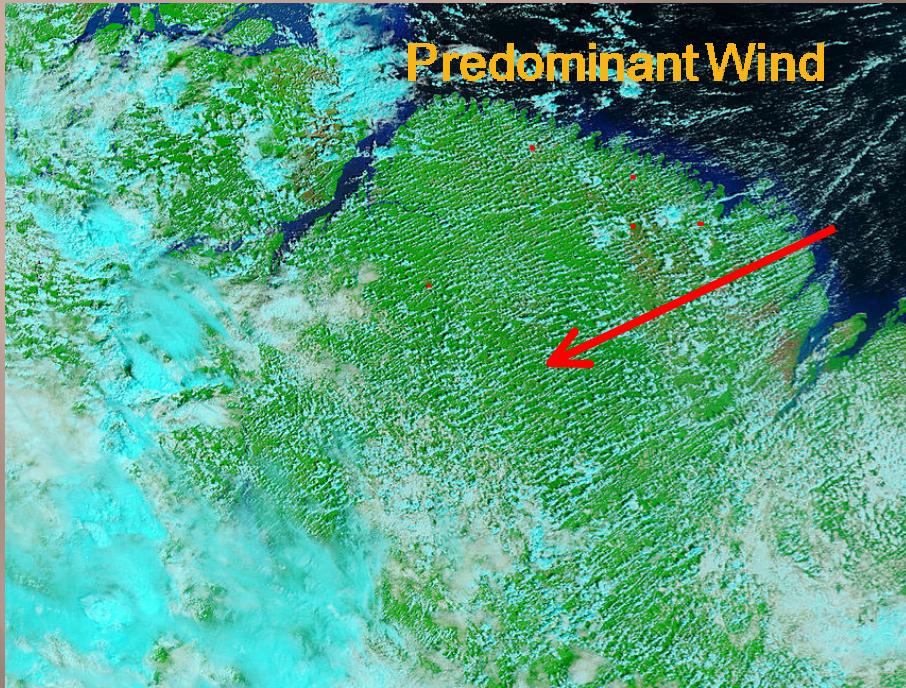
Igor Almeida (UFPA)



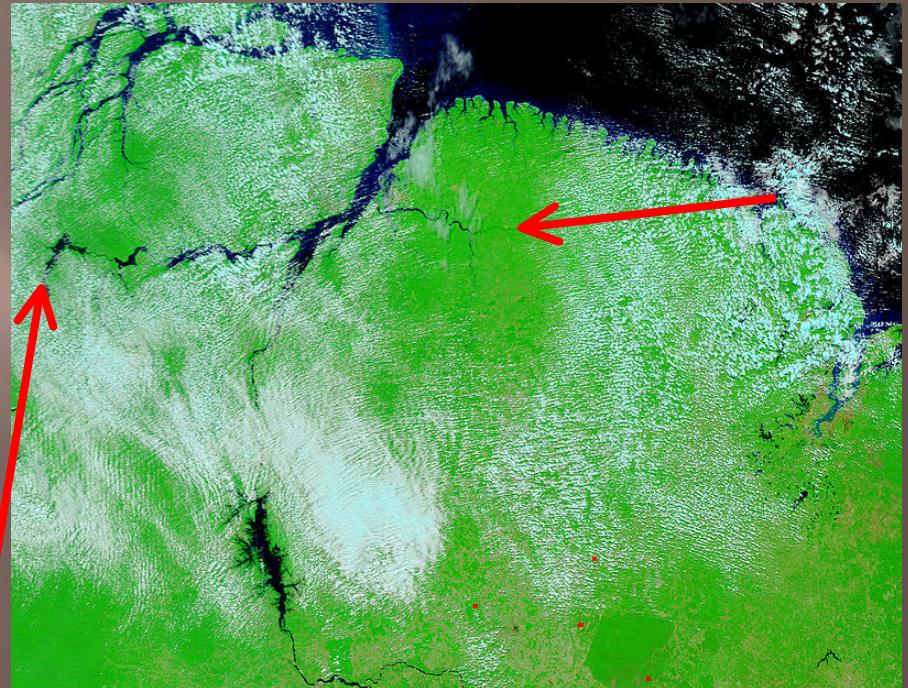
MilênioLBA2

Cloud Streets are a common phenomena in the Amazon

13 January 2007

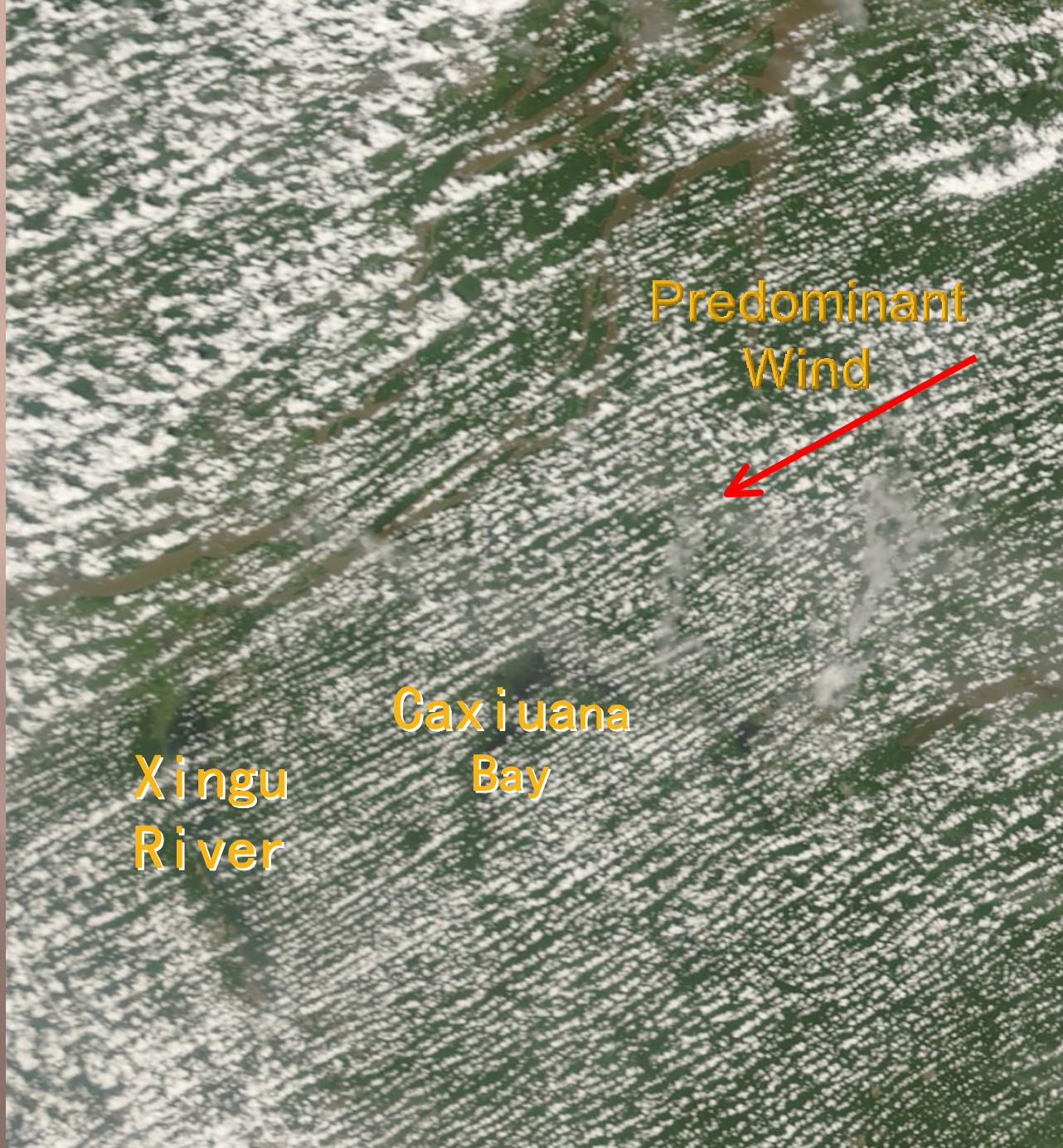


11 September 2007



Caxiuanã

Bay

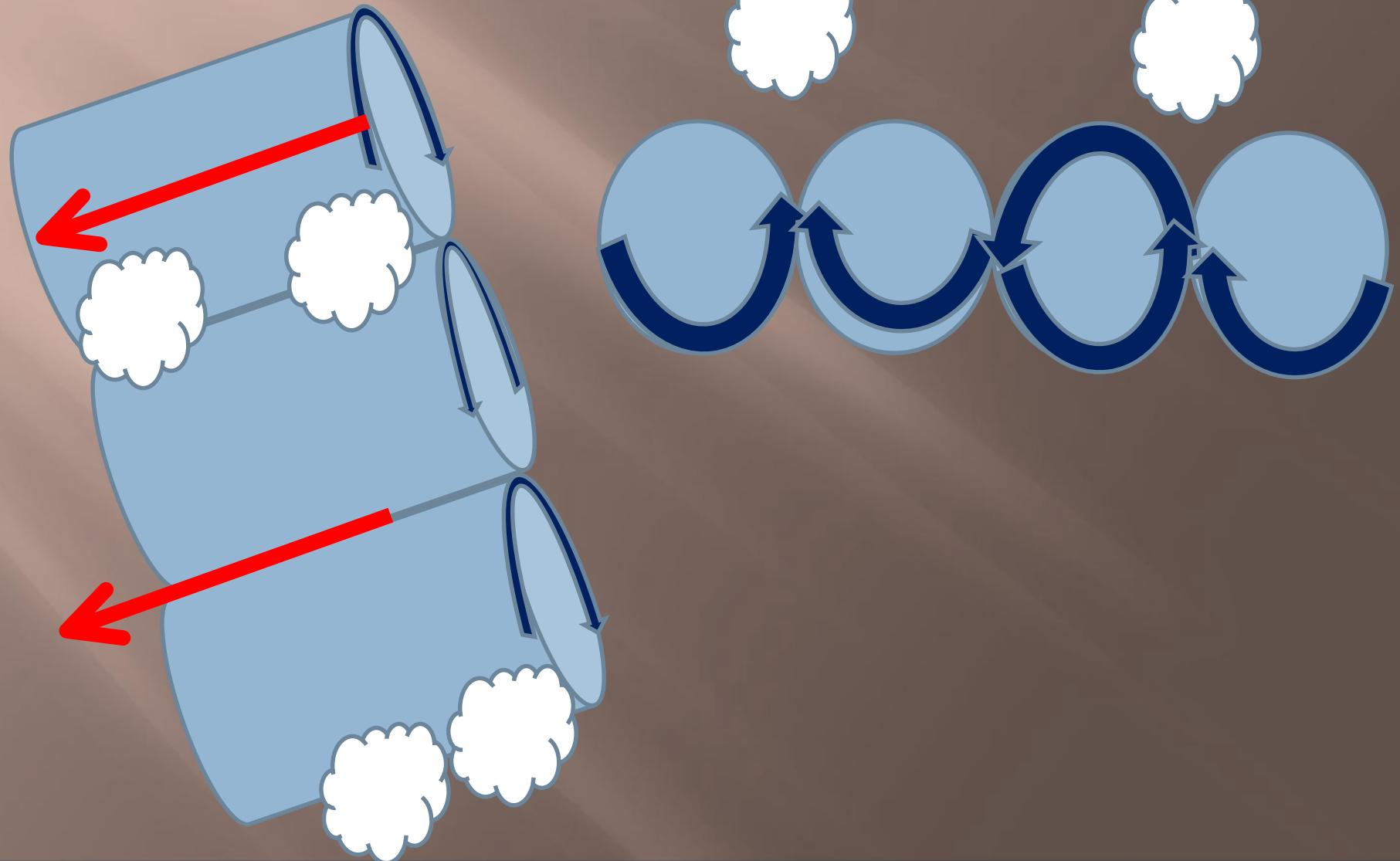


Cloud Streets

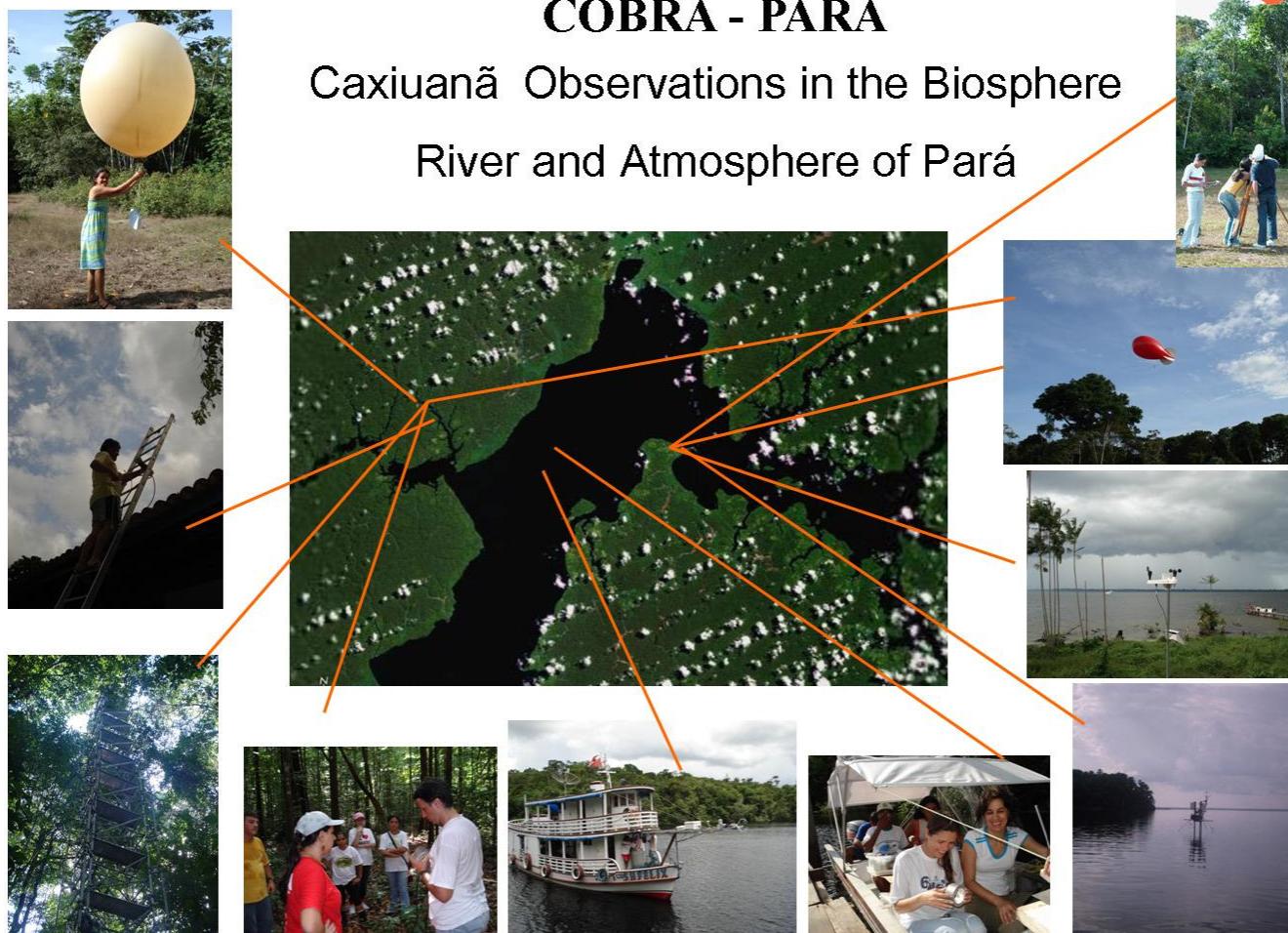
07 November 2006
10:00 A.M.

The approximate distances between the streets are 5 km

Cloud Streets, Rotors



Field Campaign 01-15 November 2006 / 50 people (25 students)



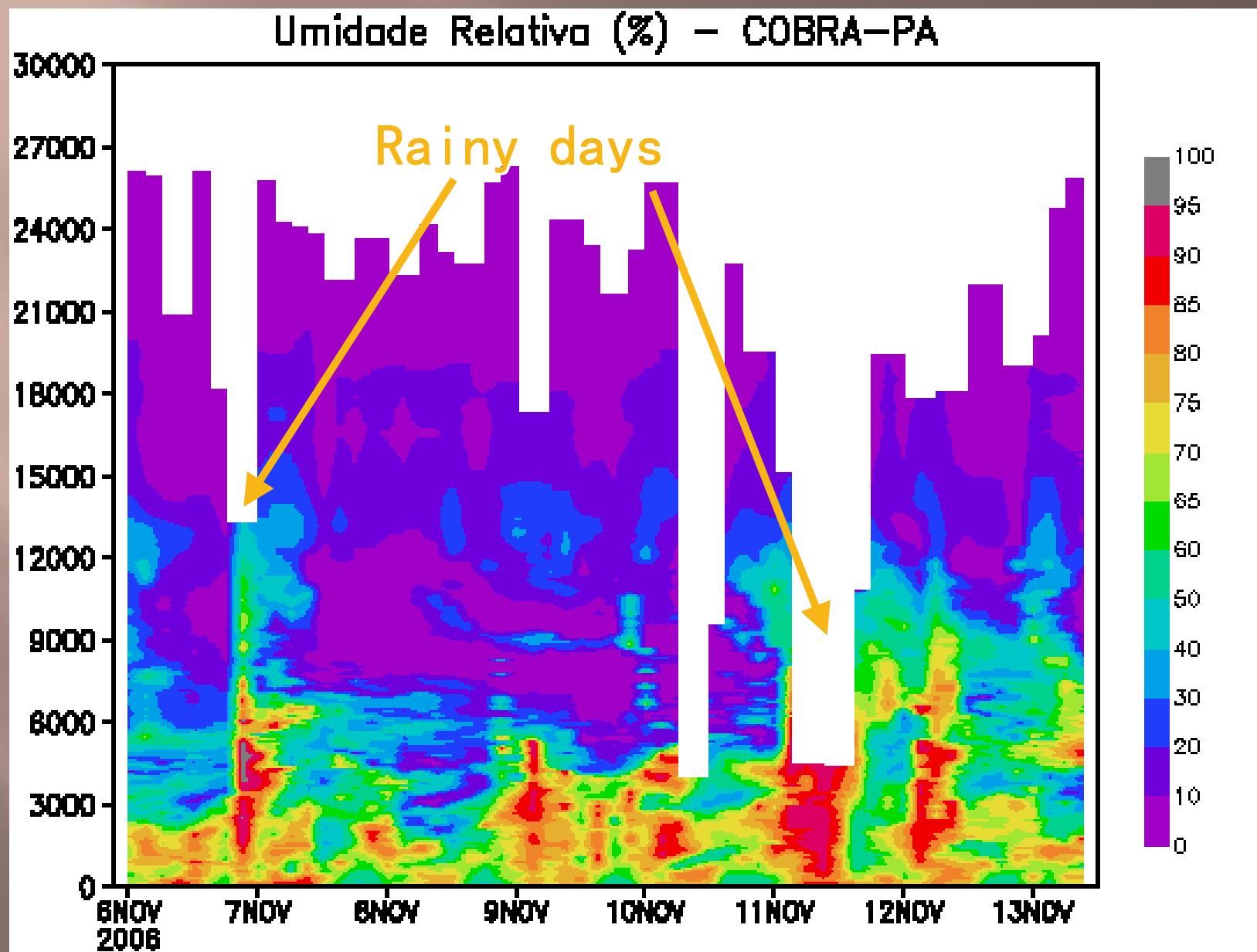
Sá, L., J. Cohen, R. Ramos da Silva, A. Gandú e co-autores, Bull. Amer. Meteor. Soc. 2007, in preparation.

Radiosoundings for the period between 06-13 November
at 00 03 06 09 12 15 18 UTC

COBRA - PARA Radiosonda

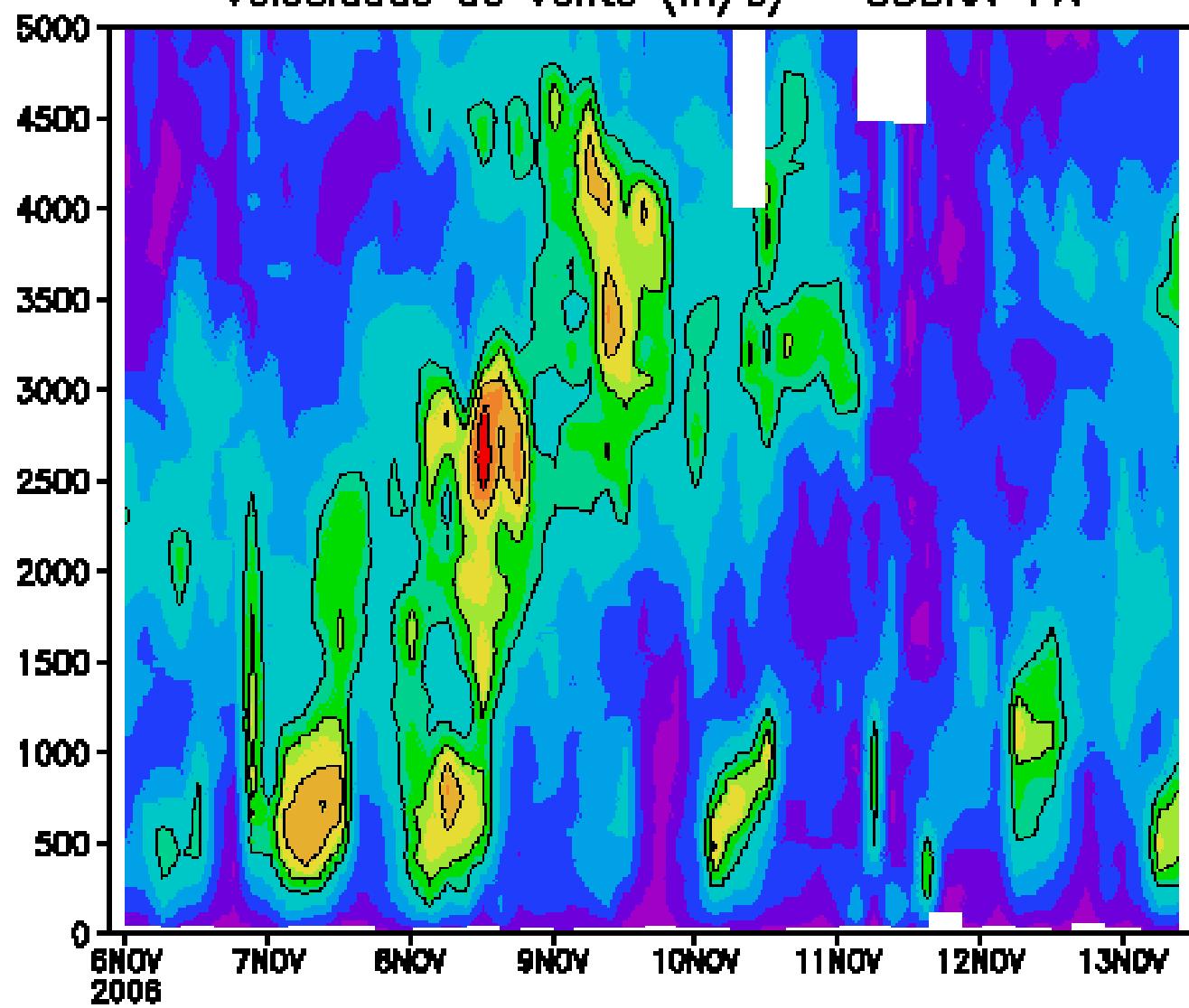


COBRA-PARA – Relative Humidity

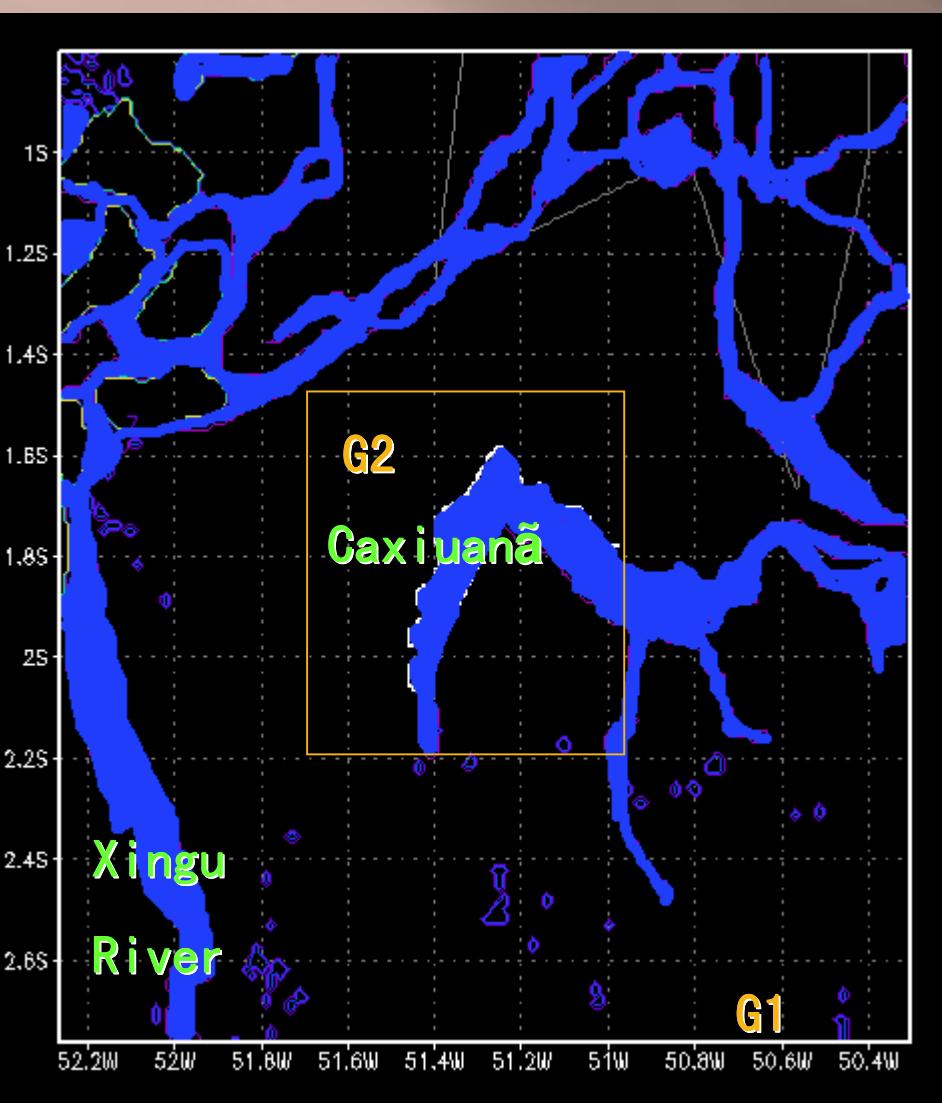


Wind
Speed
Low
Level
Jet

Velocidade do Vento (m/s) – COBRA-PA



BRAMS NUMERICAL EXPERIMENT – Grid Domain



Simulation: 07 November 2006

Grid 1 = 1.2km

G2=400m

G1 = 150 x 150 grid points

G2 = 150 x 150 grid points

35 Vertical levels

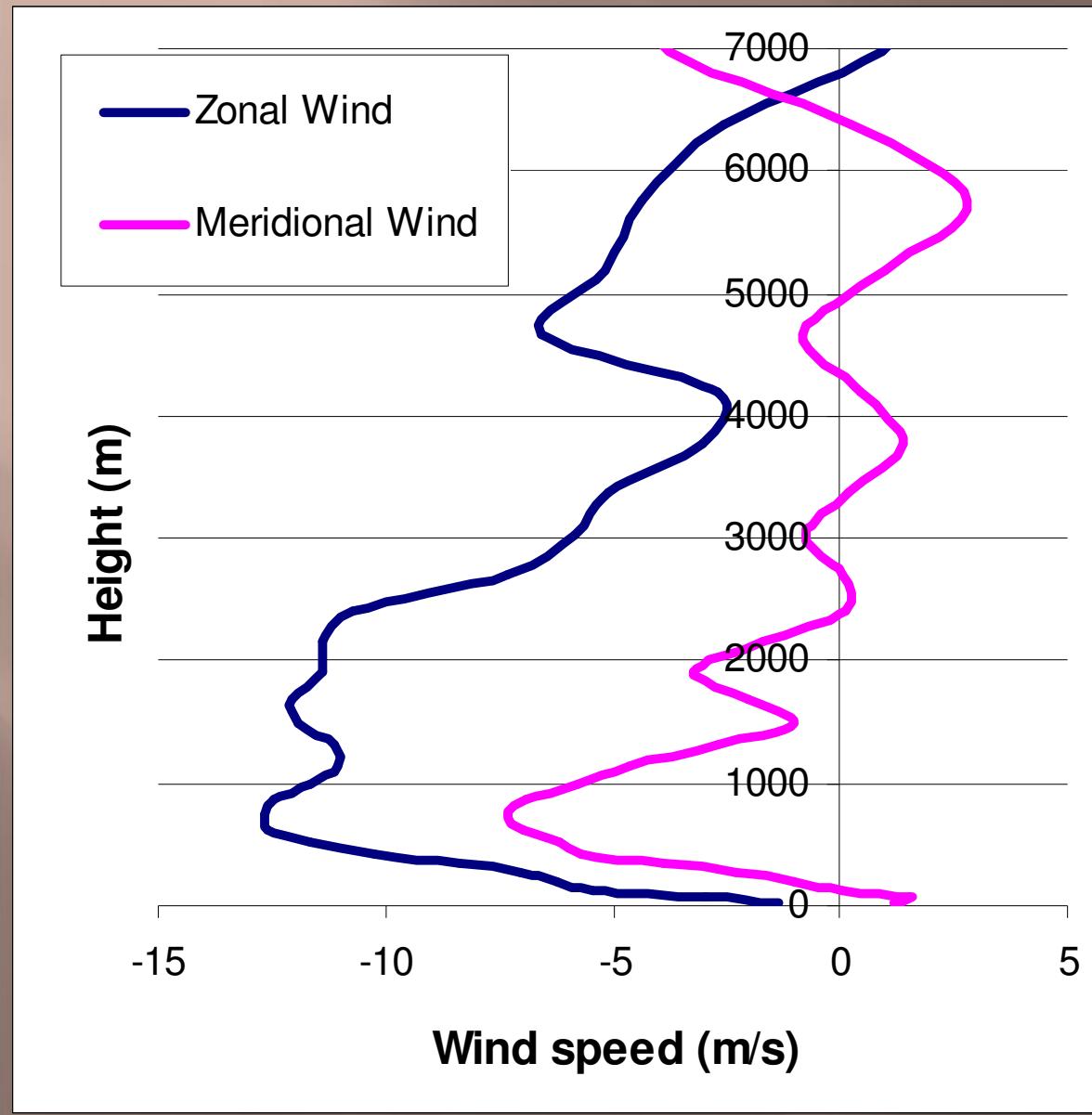
09 Soil layers

Initial Cond. =

Radiosounding

Total Time = 24 hs

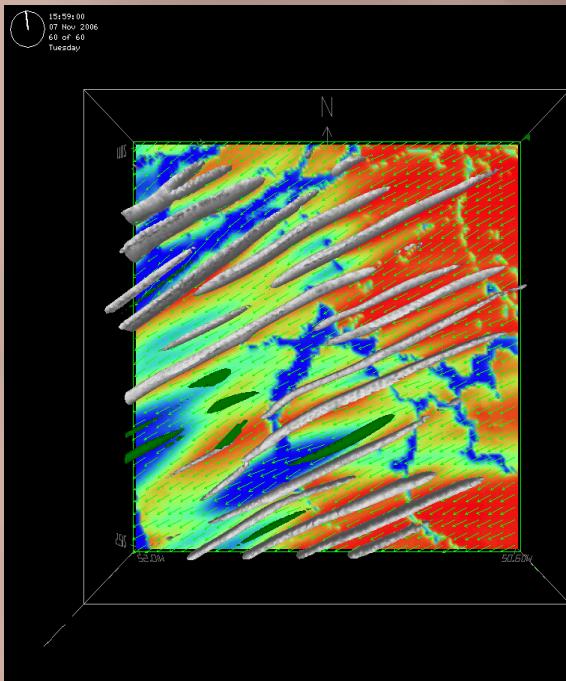
BRAMS Model Initial Condition



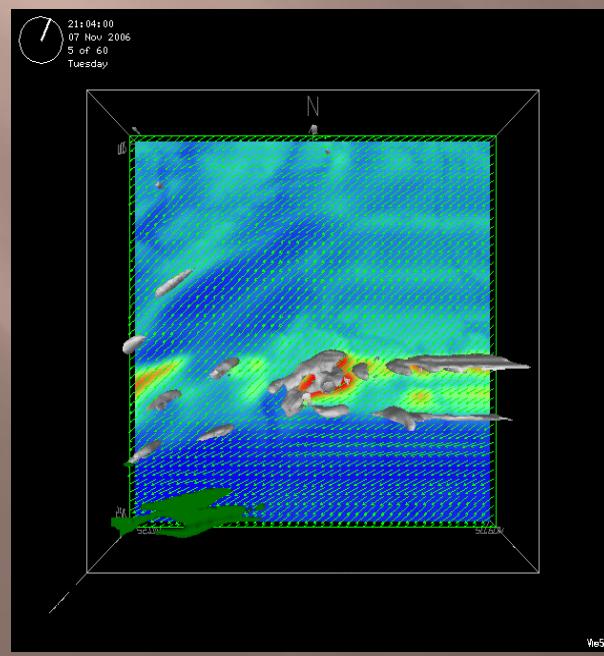
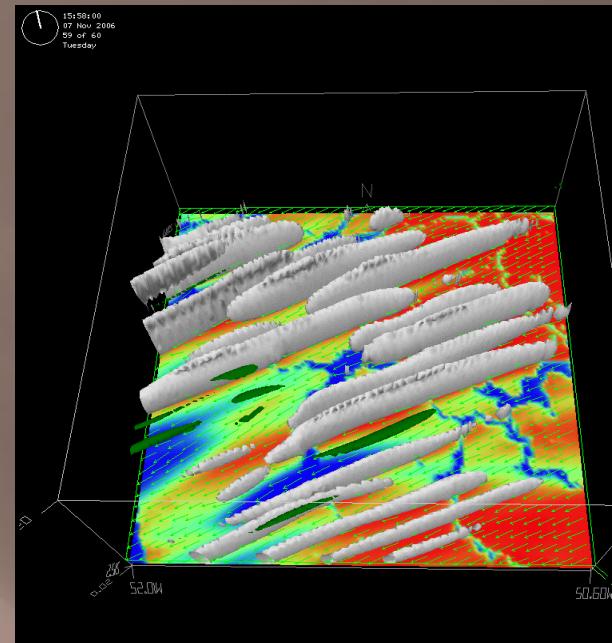
Caxiuanã
Radiosounding

07/November/2006
8:00 AM LT

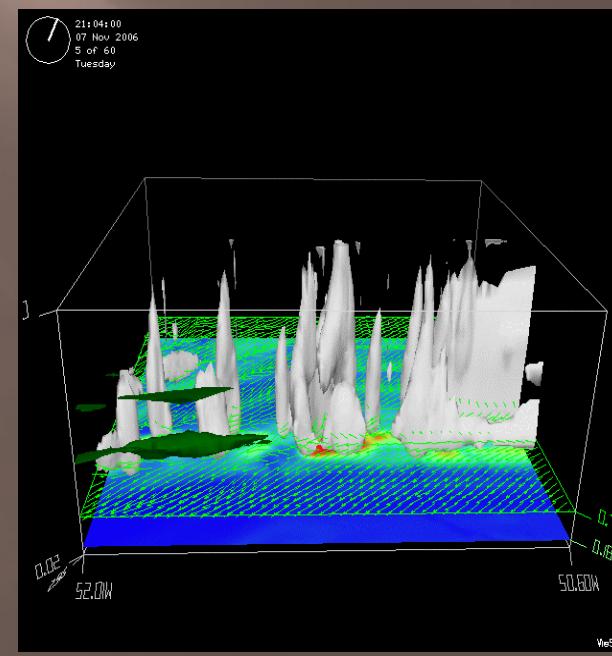
There is a strong
low level jet

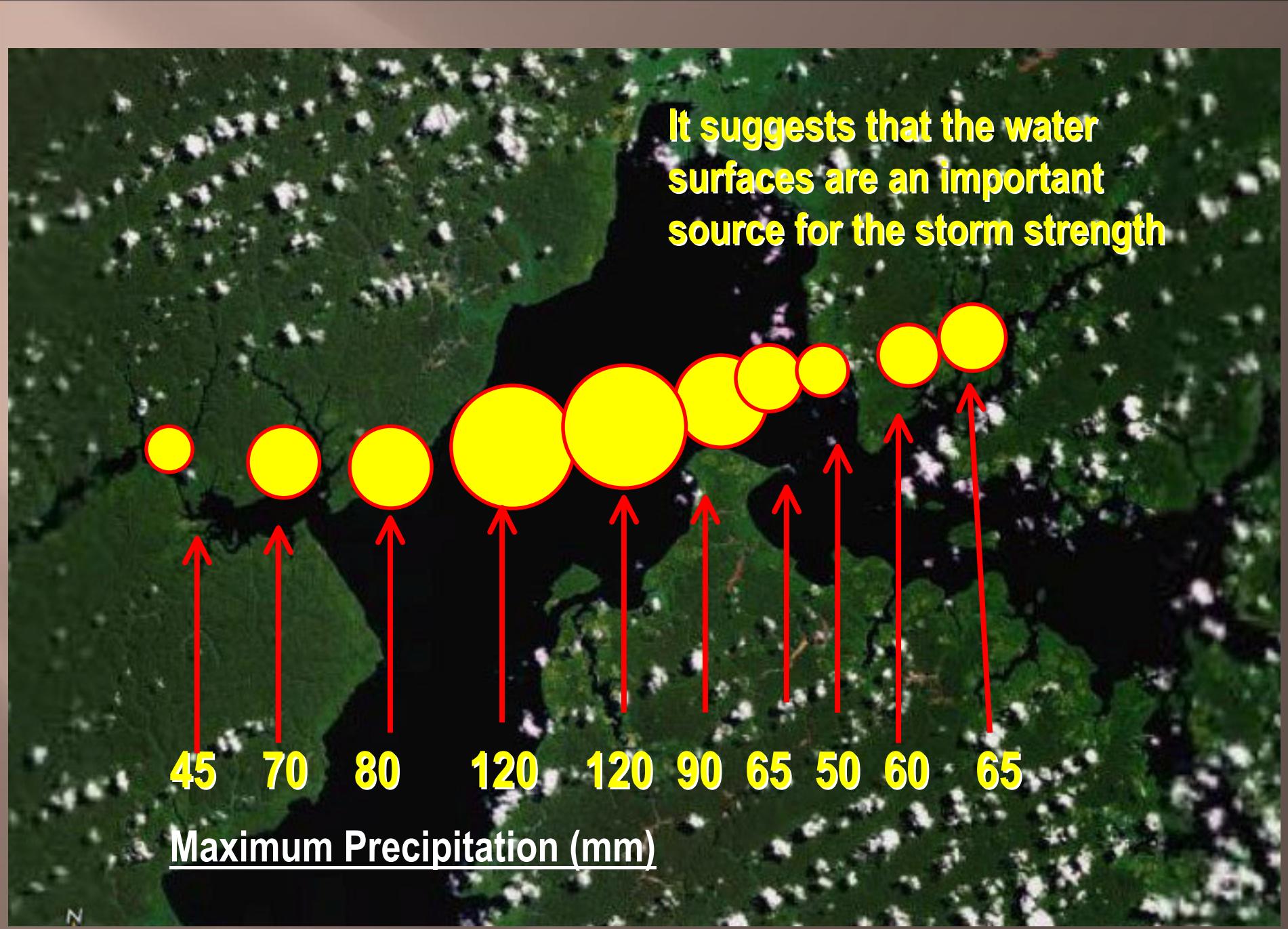


Latent
Heat Flux
Vertical
Motion
Speed
Noon
Time



Early
Evening





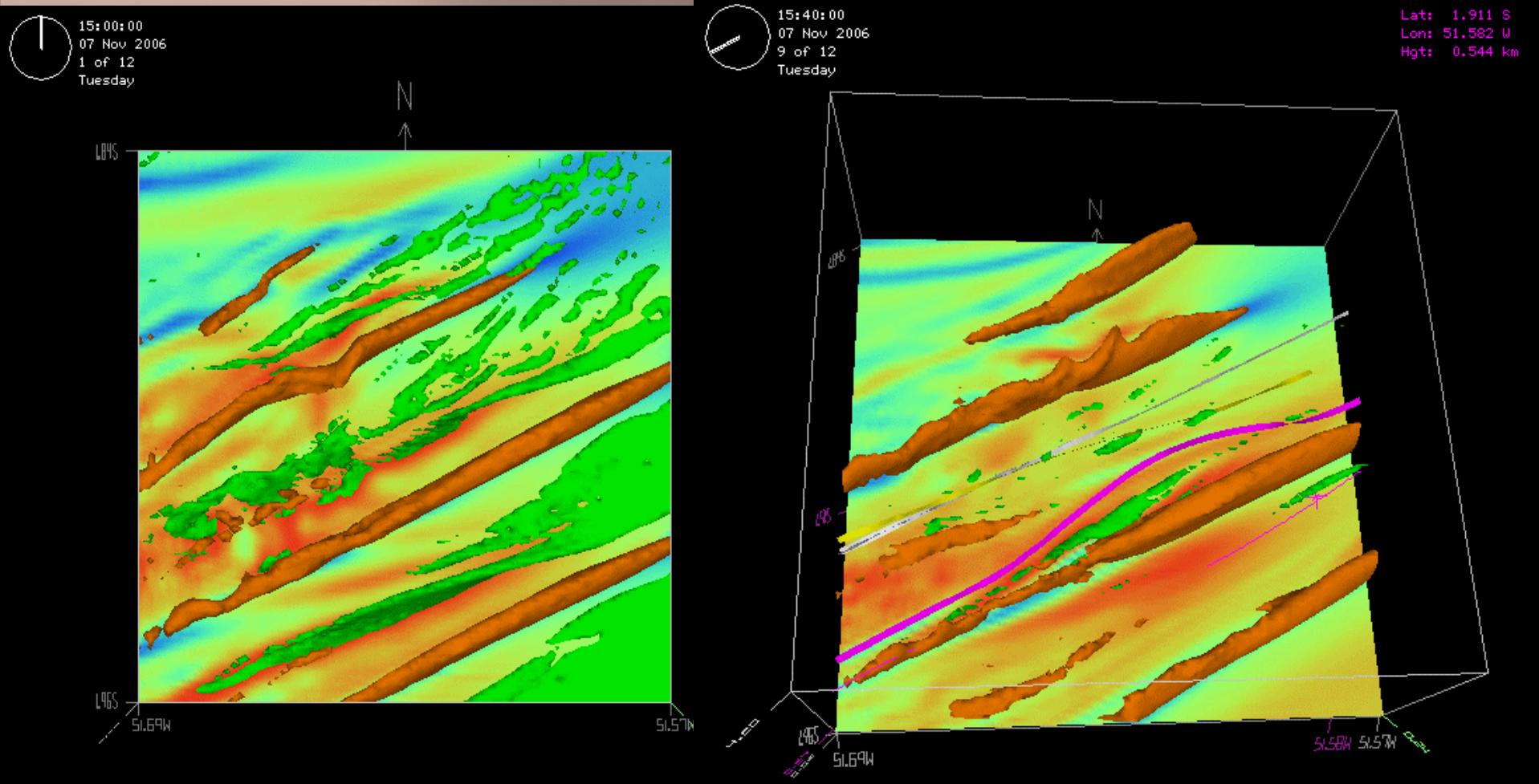
It suggests that the water surfaces are an important source for the storm strength

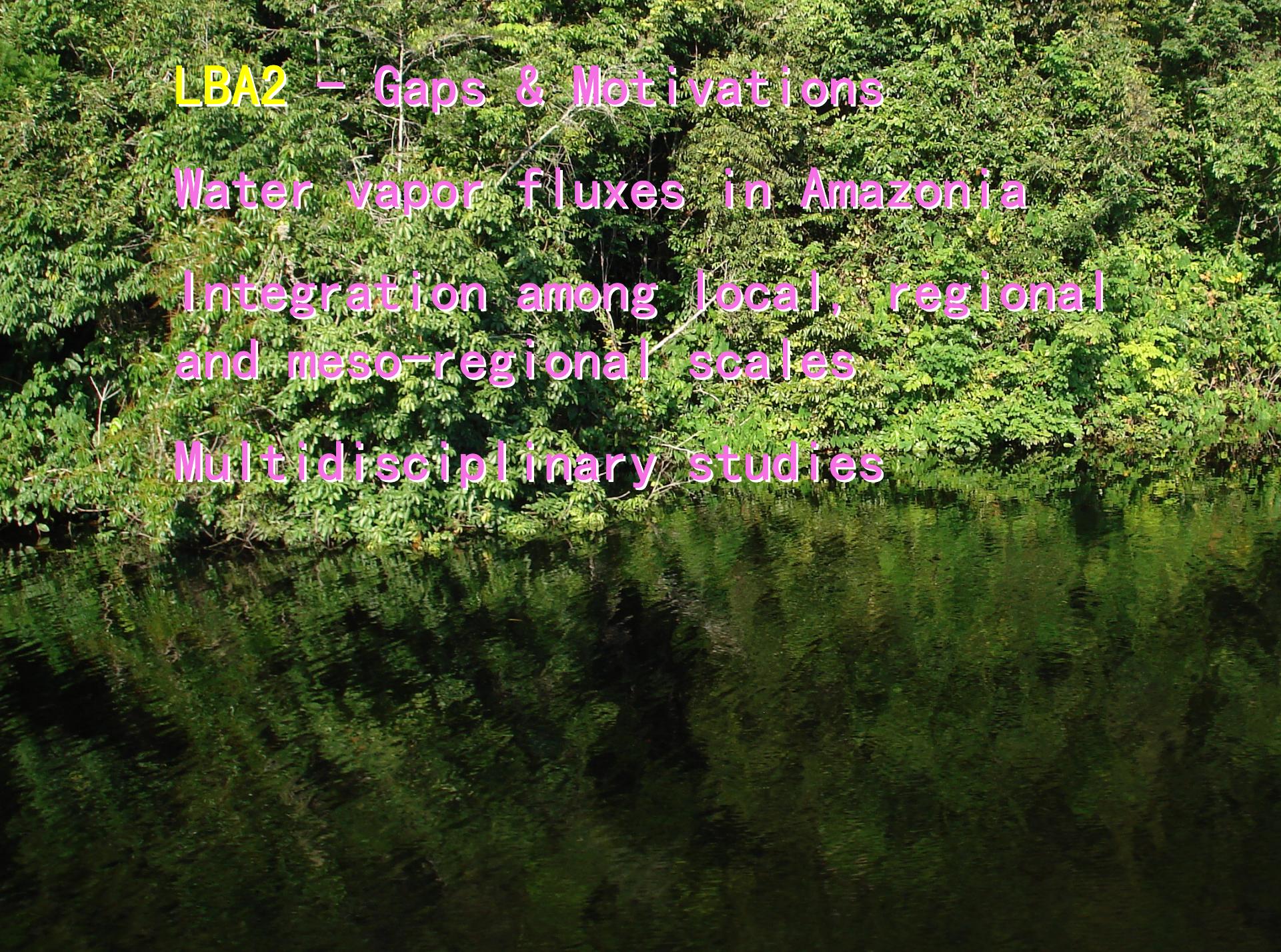
45 70 80 120 120 90 65 50 60 65

Maximum Precipitation (mm)

Stronger (>15 m/s) wind speed takes place between the upward cells

What lane on the street would the birds take?
Notice the trajectories.





LBA2 – Gaps & Motivations

Water vapor fluxes in Amazonia

Integration among local, regional
and meso-regional scales

Multidisciplinary studies

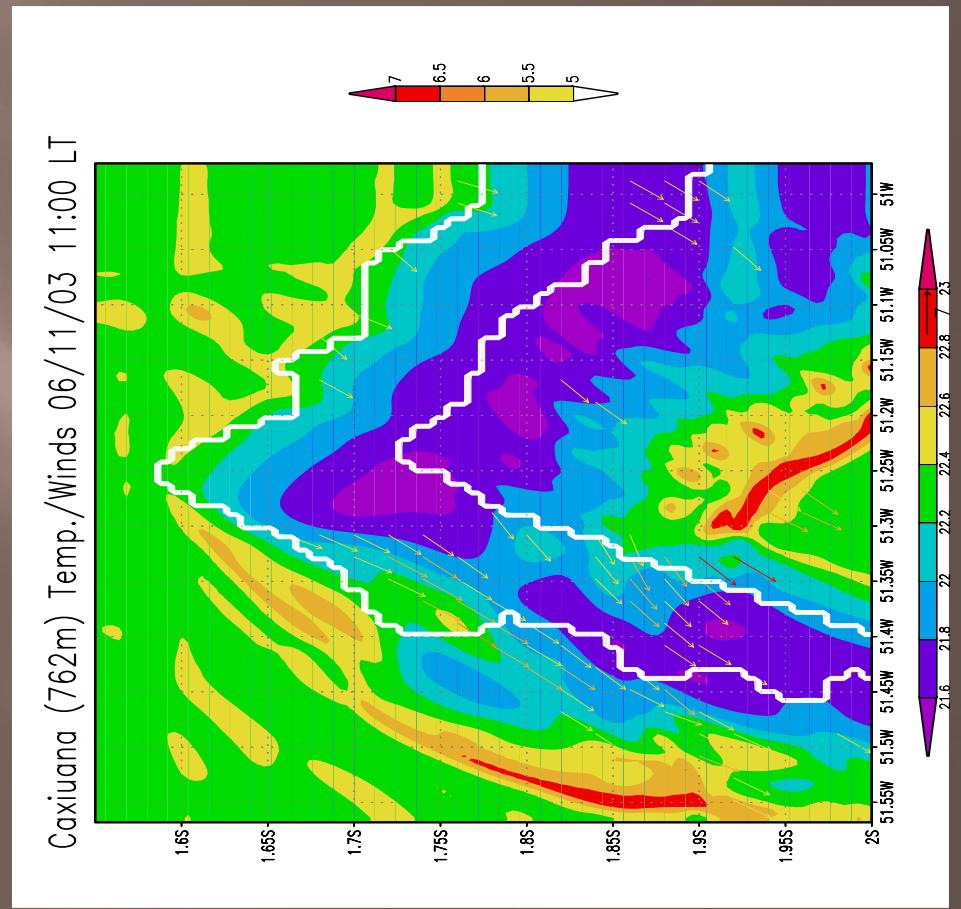
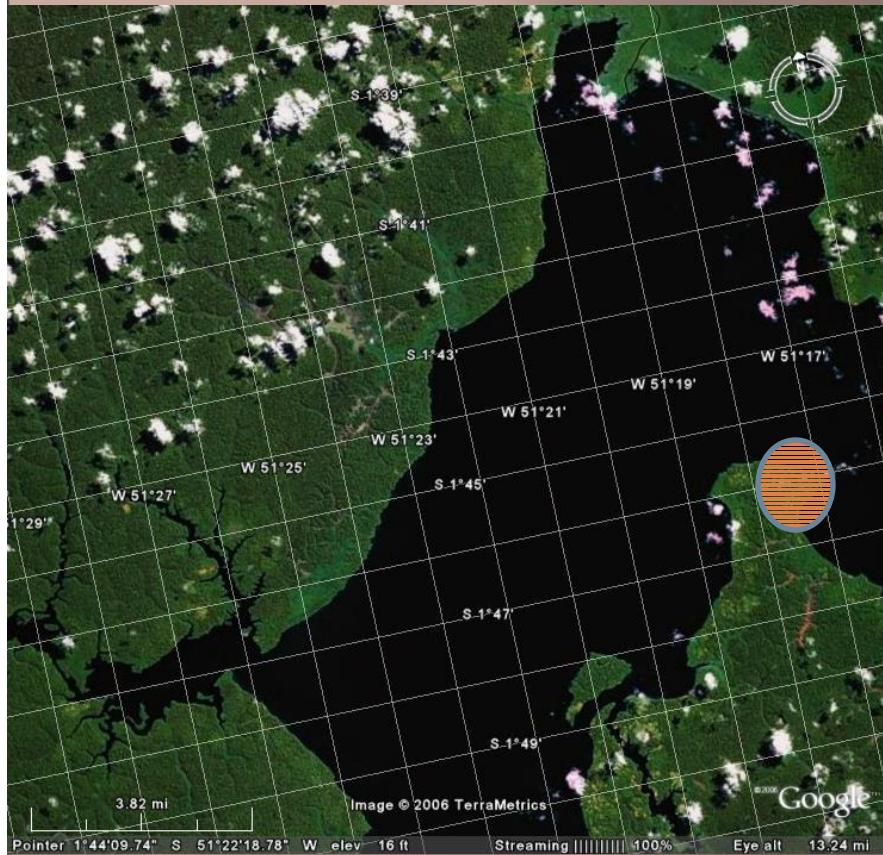
Conclusions

The surface heterogeneity affects the cloud streets formation.

Cloud streets are formed over the warm plume streets.

Strong downdrafts are created by nearby storms and propagate away from its center of propagation.

The modeling experiment suggest that storms become stronger when crossing the surface waters.





**Comunidade de Santa Luzia, estado do Pará, Amazônia
Novembro, 2006**