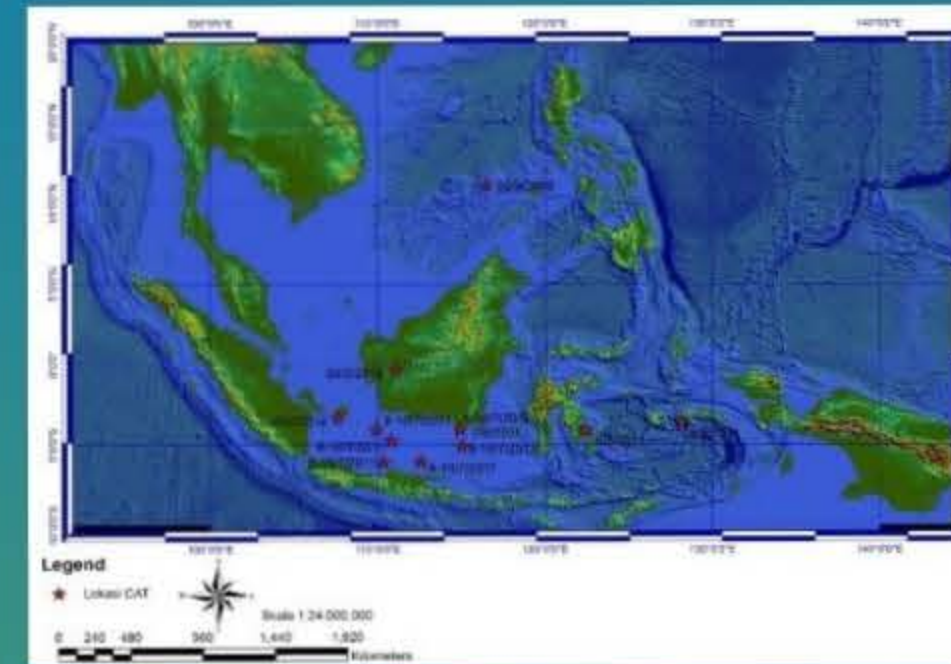


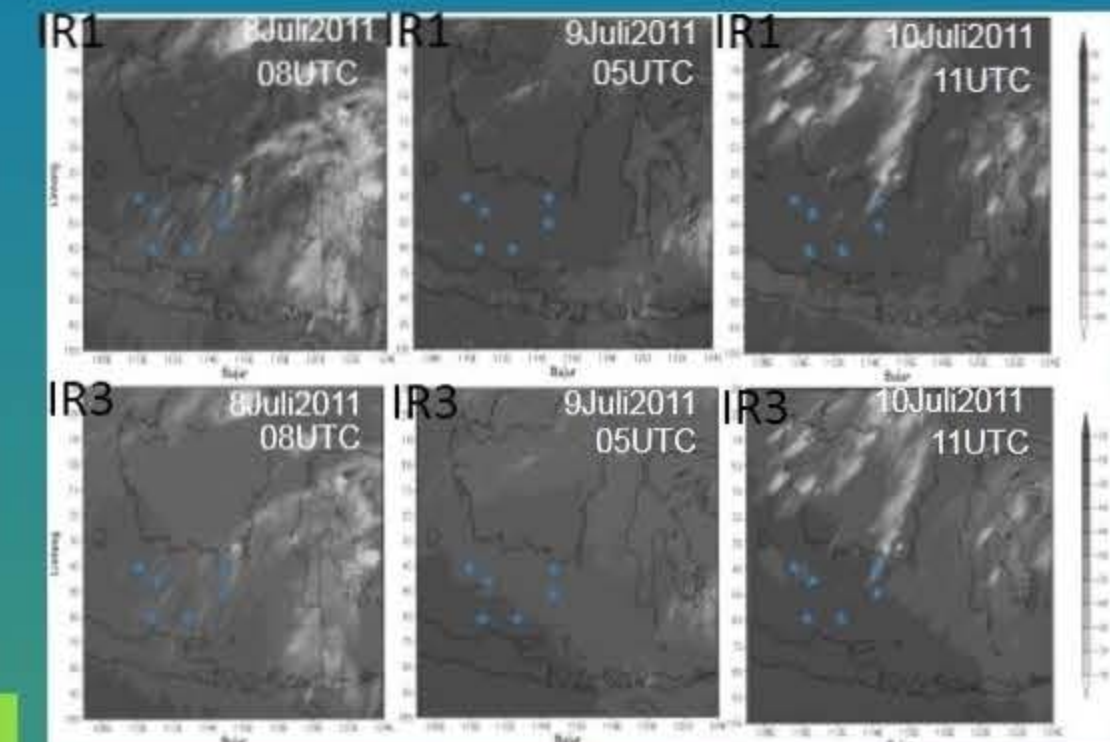
Abstract

Clear Air Turbulence (CAT) became concerns in aviation because can reduce comfort, loss of fuel and injured passengers. CAT research has been widely applied in various regions through observation and numerical models. For the tropics research on CAT still limited so necessary to study. The study using numerical simulation model WRFARW because limitations of observational data and the problems are quite complex. Turbulence data derived from PIREPs from ATC staff. Boundary and initial conditions for the simulation model using FNL (Final Global Assimilation System) data. Output models have been validate using radiosonde data at the point nearest observation of Surabaya and Makassar in which the results are considered representative of actual conditions. From the results of simulation models WRF-ARW values obtained Richardson Number (Ri) <1 in the region reported the occurrence of CAT. This is due to the presence of wind shear due to changes in wind speed on the site.

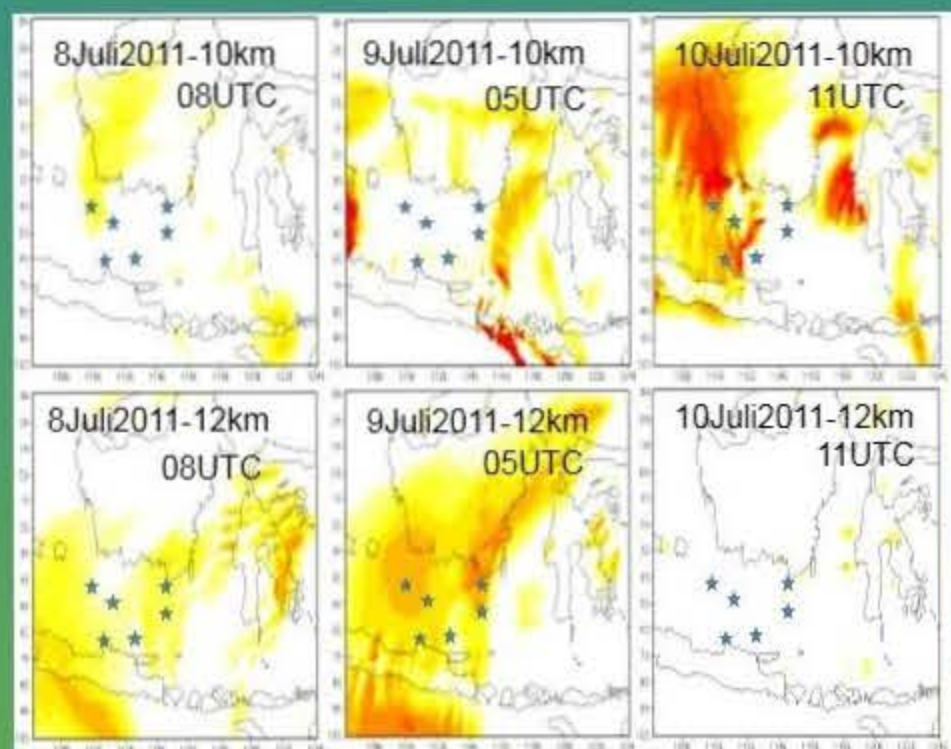
Horizontal of turbulence distribution in Indonesia



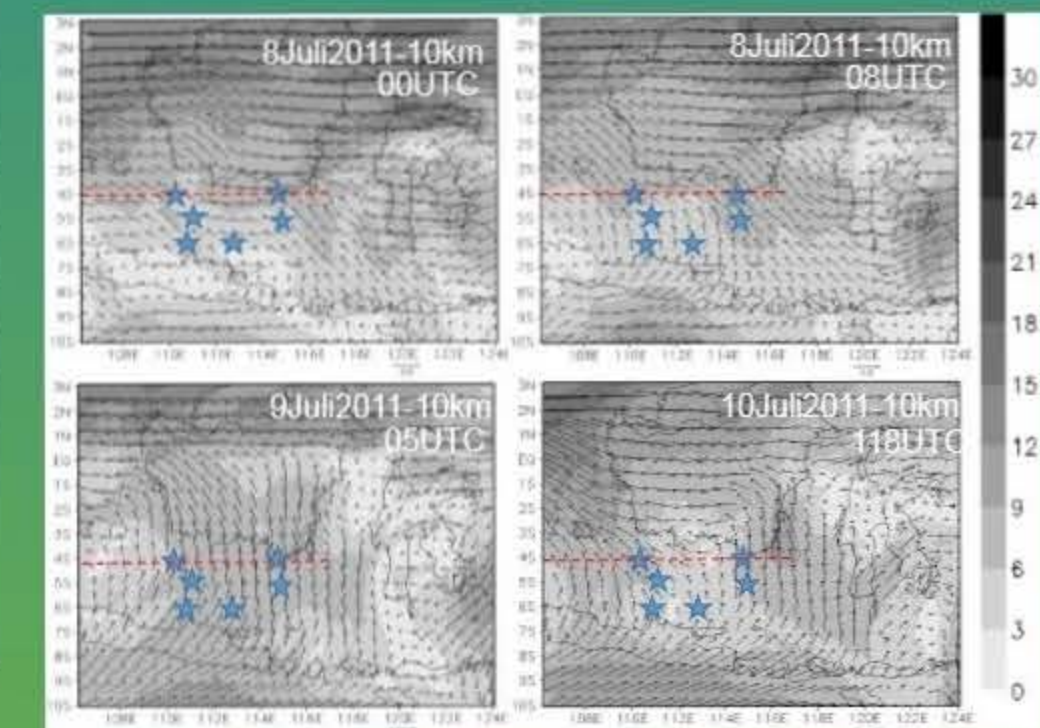
Identify events using MTSAT satellites



Ri number with turbulence



CAT mechanism



Conclusion

Turbulence that occurs in the report area is a CAT phenomenon. It is identified from the MTSAT IR1 satellite that shows the absence of a convective cloud. From WRF-ARW model simulation results obtained Richardson Number (Ri) <1 value on the reported area of CAT. This is due to windshear due to changes in wind speed both horizontally and vertically at that location

Methodology

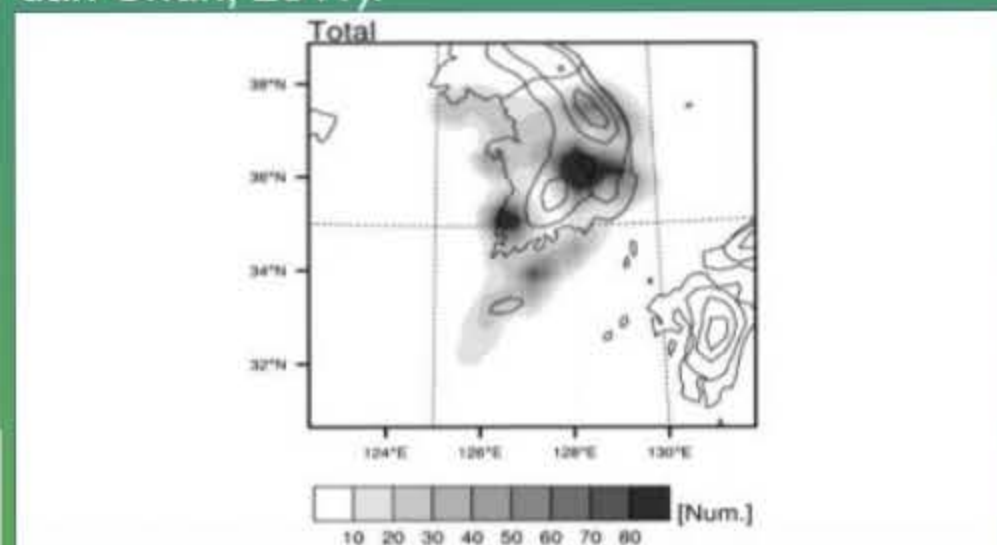
1. Distribution of turbulence events
2. Identify events using MTSAT satellites
3. Model simulation (settings and verification)
4. Richardson Number value during CAT event
5. CAT Mechanism

Bibliography

- Kim, J. H. dan Chun, H. Y., 2010, "A Numerical Study of Clear Air Turbulence (CAT) Encounters Over South Korea on 2 April 2007", Journal of Applied Meteorology and Climatology, 49, 2381-2403.
- Kim, J. H. dan Chun, H. Y., 2011, "Statistic and Possible Sources of Aviation Turbulence over South Korea" Journal of Applied Meteorology and Climatology, 50, 311-324.

Horizontal of turbulence distribution in Korea

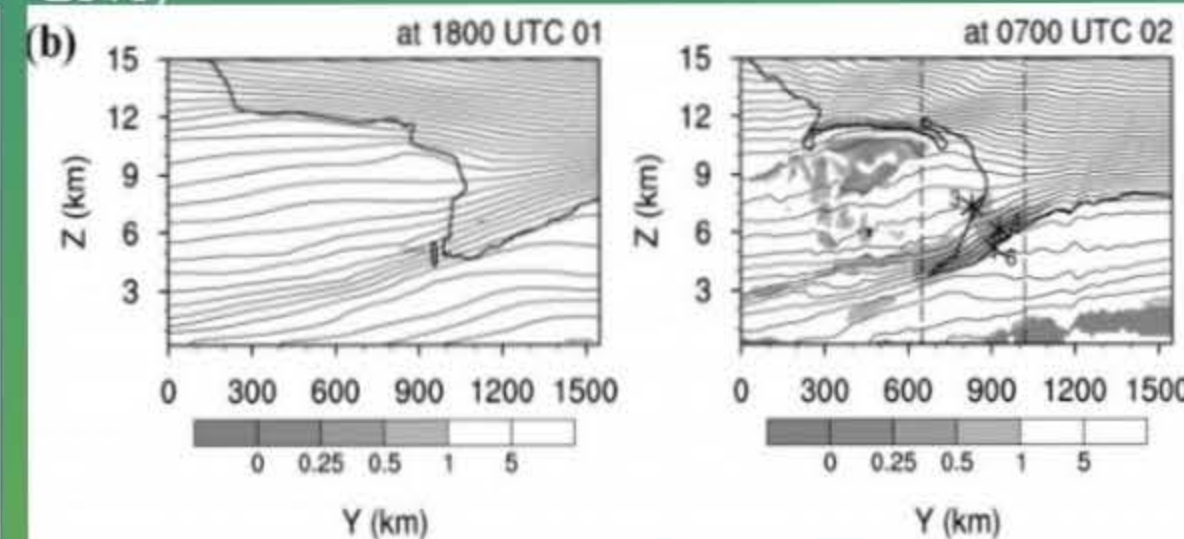
Turbulence in Korea dominated in land (Kim dan Chun, 2011).



(Source: Kim dan Chun, 2011)

Richardson(Ri) number with turbulence

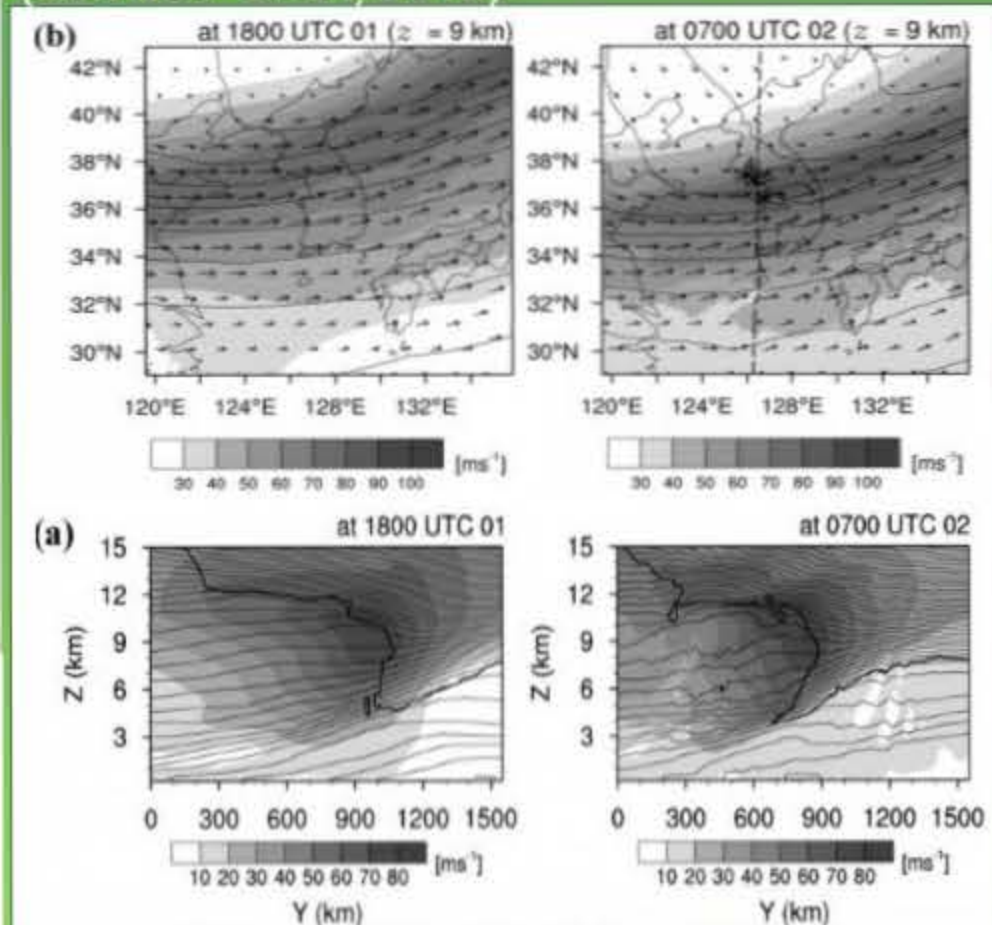
Ri number <1 → CAT Phenomena (Kim dan Chun, 2010)



(Source: Kim dan Chun, 2010)

CAT mechanism in Korea

Jetstream existence → CAT phenomena (Kim dan Chun, 2010).



(Source: Kim dan Chun, 2010)

This research is important because the explanation of CAT in the subtropics is due to the presence of front and jet streams whereas in the tropics such as the Indonesian Maritime Front (BMI) front and jet streams are rare so the mechanism is not yet clearly known. The lack of observational data and complex problems, detailed studies of the CAT mechanism involve numerical simulations using meso-scale weather models