

Quality assessment of Automated Weather Station (AWS) data for abrupt weather changing during Cyclone Roanu

Charith Madusanka Widanage¹, Dongxiao Wang¹, YaoLuo¹, Fenghua Zhou^{1*}, Tilak P. Gamage², Shengan Wang¹, C.H. Wickramage¹, G.G.G.R. Gihara³ and DanlingTang¹

¹*State Key Laboratory of Tropical Oceanography, South China Sea Institute of Oceanology, Chinese Academy of Sciences, Guangzhou 510080, China*

²*Faculty of Fisheries and Marine sciences & Technology, University of Ruhuna, Matara, Sri Lanka*

³*Faculty of Engineering, University of Peradeniya, Peradeniya, Sri Lanka*

Real-time meteorological observations can be provided by Automated Weather Station (AWS) gathering data from a network through various communication channels. The AWS was deployed in the south of Sri Lanka, at 5.936108°N, 80.574900°E, and facing toward the north Indian Ocean. wind, precipitation, relative humidity, downward solar radiation, air temperature and air pressure simultaneously records in this region, with the aim of offering the reliable dataset in advances for our understanding of the variability in boundary layer. To increase the reliability of the system, many of the crucial parameters are measured redundantly with duplicate sensors or sensors of different principle. Furthermore, it is a valuable resource for ocean model parameterization and validation which has been investigated using the comparison with the ERA-Interim reanalysis data. The archived AWS dataset from Dec. 2015 to Oct. 2016 is examined in detail to understand the one-year seasonal variability and the episodic event, Cyclone Roanu. This abrupt weather change has been noted by the low air pressure, high relative humidity, high precipitation and reduction of downward radiation in May 2016. The analysis shows that AWS recorded pre-cyclone conditions and started to respond since 13th May 2016. The AWS recorded post-cyclone conditions which are illustrated by reduction of downward radiation with precipitations after 28th May 2016. These signals are evident for sustainability of AWS to the cyclonic conditions.

Keywords: AWS, Southern Sri Lanka, wind

*Corresponding author- email: zhoufh@scsio.ac.cn