

## Cyclone *Ockhi* and its impact over Minicoy Island, Lakshadweep, India

Small islands in the Arabian Sea such as the Lakshadweep Islands offer a unique ecosystem that harbours diverse types of flora and fauna. Cyclone *Ockhi* which occurred on 1 December 2017 caused severe damage to the ecosystem and economy, particularly in Minicoy Island, Lakshadweep. Here we provide an overview of the after effects of the cyclone.

Initially, a low pressure area formed over the Andaman Sea on 22 November 2017, under the influence of a remnant upper air cyclonic circulation from the Gulf of Thailand. Subsequently, it developed over the southern part of the Bay

of Bengal and moved westwards causing rainfall activity over southern peninsular India at regular intervals<sup>1</sup>. After landfall, it crossed Tamil Nadu and Kerala, and then headed towards the Minicoy Island. Figure 1 shows the storm track. Cyclone *Ockhi* was categorized as a Very Severe Cyclonic Storm that achieved a peak intensity of 150–160 kmph and lowest central pressure of 976 hPa (<https://earth.nullschool.net/>) on 1 December 2017, causing a widespread damage to the island infrastructure and its agriculture system (Figure 2). Though no human casualty was reported, a large number of

animals, both domestic and marine, were killed and coral reefs destroyed. Table 1 presents the total estimated loss and damage incurred due to cyclone.

Strong winds damaged houses, especially those located along the shoreline and towards the western side of the Island, where there is a dense growth of coconut and other plants. Public infrastructure, including high-level mobile towers and schools sustained heavy damage. The storm surge and strong winds resulted in the destruction of property and the natural environment, including a variety of corals. Marine shells, including

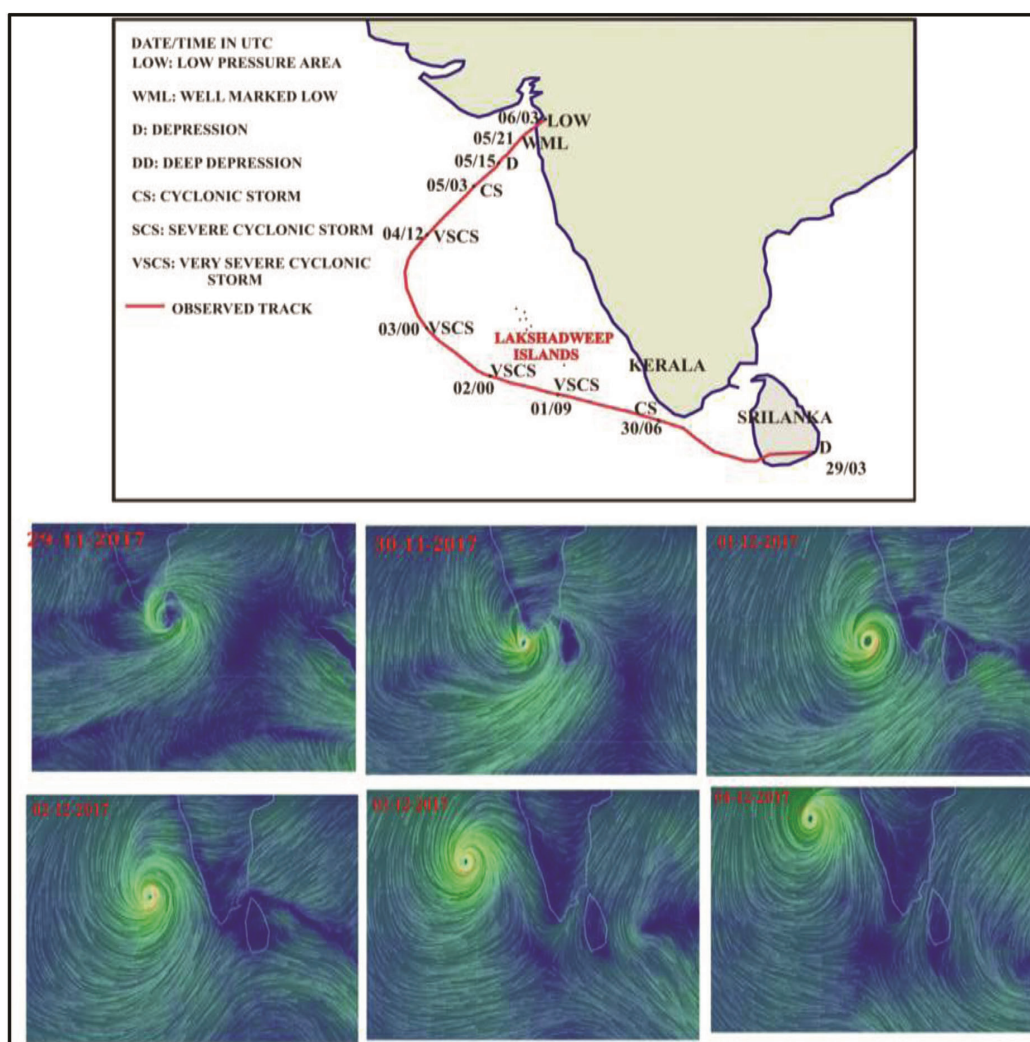


Figure 1. Path of cyclone *Ockhi* (<https://earth.nullschool.net/>).



**Figure 2.** Photographs illustrating damaged boats and infrastructure in the Minicoy Island during the cyclone *Ockhi*.

**Table 1.** Loss and damage incurred by cyclone *Ockhi* in Minicoy island (available by direct visit, from Dweep Panchayat records, and records received from Agricultural Departments of Minicoy Island)

Damage	Approximate cost (crores of rupees)
Boat damages	
Six boats totally damaged	3.25
Ten boats totally drowned under sea	
Nine boats partially damaged	
Total no. = 24 boats	
Agriculture damages	
Coconut trees fallen 13,226	2.3
Coconut tree crown damaged 19,358	
Total $n = 32,584$	
Other trees, including banana and local jackfruit trees damaged: $n = 6455$	
Settlement damage	
Eighty-five thatched houses fully damaged; 850 houses partially damaged	
Communication	
High-level mobile tower	
Electricity lines	

mollusk species, sea urchins and coral *Acropora* species were disturbed from the lagoon side because of the storm surge and tidal action. Due to its geographic location, remoteness and topographic features, the island is highly

vulnerable to natural disasters. Additionally, inadequate connectivity to the mainland accentuates the post-cyclonic rescue operation. Considering the Island's contribution to the Indian economy by means of fish production and export,

tourism, coconut cultivation and export of its by products. etc., it is high time that a self-sustaining mechanism is built and adequate governmental support is provided to protect the rights of the small island communities and ensure their survival amidst natural hazards.

We recommend the following actions. (1) Sustainable development knowledge platforms should be introduced. (2) Suitable sand barriers need to be erected along the shores to avoid potential threats arising from sea-level rise and increasing tidal activities. (3) An effective mechanism should be in place to provide compensation for damage to personal property such as boats and houses. (4) Risk or hazard maps should be prepared. (5) Installation of automatic weather stations, microwave rain radar, wind profiler, etc. should be prioritized to build a robust weather data acquisition system and thereby predict extreme weather events. (6) Inter- and intra-island communication systems need to be strengthened. (7) Adequate arrangement of National Disaster Response Force should be in place to carry out rescue operations and provide food, medicine, water, etc. Relocating the people affected to safer places and rebuilding of schools, hospitals, etc. must be prioritized immediately after an aftermath.

1. Indian Meteorological Department bulletin report, December 2017.

ACKNOWLEDGEMENTS. We thank the Dweep Panchayat of Minicoy Island for providing support and the necessary information. We also thank Dr Muneer, A. A. Mohammed and D. G. Adeelah (Minicoy Island) for their help and Dr S. Chakraborty (IITM Pune) for his valuable suggestions.

Received 13 January 2018; revised accepted 7 May 2018

A. A. FOUSIYA\*  
AASIF MOHMAD LONE

Department of Geology,  
Anna University,  
Chennai 600 025, India  
\*For correspondence.  
e-mail: fousevs@gmail.com