



Regional-scale forcing of precipitation in selected modern volcanic eruptions

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Major volcanic eruptions are known to lower the Earth's surface temperature but their regional-scale forcing of precipitation is poorly understood. In this presentation, three modern volcanic eruptions have been selected for investigation. The three eruptions are the February 1963 Agung eruption in Indonesia, the March 1982 El Chichón eruption in Mexico and the June 1991 Pinatubo eruption in the Philippines. Abnormally low annual rainfall was found in the southern China region during 1963 and 1991 respectively. Based on the total annual rainfall recorded at the Hong Kong Station, the rainfall was the driest and the tenth driest since record began in 1884 respectively. In contrast, abnormally high annual rainfall was found in southern China in 1982 with the Hong Kong Station recording the second wettest year since record began. Based on the pattern of rainfall observed, near-field major volcanic eruptions located in the Indonesian-Pacific gateway may lead to abnormally dry conditions in southern China through a shift of wind direction to predominantly offshore. On the other hand, major far-field volcanic eruptions in the eastern Pacific may give rise to abnormally wet conditions through the spread of the volcanic cloud across the globe. In the El Chichón eruption, the spread of volcanic cloud across the Pacific Ocean was tracked by satellite images. Heavy rainfall occurred when the volcanic cloud reached the coastal regions of southern China. Volcanic eruptions are therefore a possible causative factor in monsoonal variability.