

## Variations in the D-region heights during the total solar eclipse of 9 March 2016 in Indonesia using AVON data

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We report increase in the reflection heights of LF transmitter signals during a total solar eclipse in Indonesia on 9 March, 2016, using AVON (Asia VLF Observation Network) data. The transmitter signals of JY-Fukushima (FKS, 40 kHz), JY-Saga (SAG, 60 kHz), and BPC (China, 68.5 kHz) were received at Pontianak (PTK), Indonesia, where the maximum magnitude of the solar eclipse was 0.929 at 00:25 UT. The magnitude of the solar eclipse at the transmitter sites was about 0.2. The all paths did not cross the eclipse path. During the solar eclipse (00:00 – 01:30 UT), the average changes of the phase delay of the SAG-PTK and BPC-PTK paths were 40° and 42°, respectively. Assuming a usual daytime height for the LF waves to be 70 km, the phase delays on both the SAG-PTK and BPC-PTK paths correspond to the increase in the reflection heights of about 1.5 km based on the Earth-ionosphere waveguide mode theory. The LF intensity of the FKS-PTK path during the solar eclipse was slightly larger by about 6.5 dB than that before and after the eclipse time. The increase in the LF reflection heights suggests the decrease in the D-region electron density during the solar eclipse.