

## Did the Chinda Falls recede? –Evolution of river topography in the Oita Bungoono Geopark, Japan

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The Chinda Falls is one of the major sites of the Oita Bungoono Geopark, those are composed of O-daki (Male Falls) over the main stream of the Ono River and Me-daki (Female Falls) over the tributary Hirai River. These waterfalls were formed by the erosion of the columnar jointed welded tuff of the Aso-4 pyroclastic flow of about 90,000 years ago. The distance between these two waterfalls is about 300 meters, however the painting by Sesshu that is a famous painter in 15th Century show that the two waterfalls are close to each other. Some local people say the O-daki receded a few hundred meters after 15th Century.

The width of the Ono River is almost constant in the downstream of O-daki fall except for just below the fall. This means that the location of the fall is stable for a while and the lateral erosion is continuing at this point.

The rock wall in the south of the O-daki fall, where a tunnel of a channel for fishes was built in 1913, collapsed down in these tens of years. The columnar-jointed welded tuff of this wall overlies on the sedimentary rocks of Upper Cretaceous Onogawa Group, and the boundary between these two rocks is inclined to the river. This means that the wall of welded tuff is easy to collapse down. Collapsing of walls is a problem for the conservation of sites however the typical topography of the Oita Bungoono Geopark is formed by such collapsing. It is necessary to enhance the understanding of the people in local community for the conservation of sites and the disaster prevention.

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