



Discharge process of cesium during rainstorms in headwater catchments, Fukushima, Japan

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We monitored Cs-137 concentrations in stream water, groundwater, soil water and rainwater in the Yamakiya district located approximately 35 km north west of Fukushima Dai-ichi Nuclear Power Plant (FDNPP) from June 2011 through July 2013, focusing on rainfall-runoff processes during the rainstorm events. Two catchments with different land cover (Iboishiyama and Koutaishiyama) were instrumented, and stream water, groundwater, soil water and rainwater were sampled for approximately one month at each site, and intensive sampling was conducted during rainstorm events. The ¹³⁷Cs concentration in stream water showed a relatively quick decreasing trend during 2011. Also, during rainfall events, the Cs-137 concentration in stream water showed a temporary increase. End Member Mixing Analysis was applied to evaluate contribution of groundwater, soil water and rainwater in discharge water during rainstorm events. The groundwater component was dominant in the runoff, whereas rainwater was main source for the Cs-137 concentration of the stream increasing during the storm events. In addition, a leaching of Cs-137 from the suspended sediments and the organic materials seemed to be also important sources to the stream.