Estimation of total river flux from Japanese basins to Pacific ocean and its numerical prediction using cell distributed runoff model

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1. Introduction
The demand for having simulated freshwater outflow data on the river mouths is especially conspicuous in coastal modeling where fluvial influence often makes big difference in results and in climatological modeling where fluvial influence is needed to join the oceanographic, meteorology and hydrology cycle into bigger comprehensive closed cycle to be used for more accurate climatological models. Coastal and climatological models do not usually use freshwater outflow data from river's estuaries because they either neglect the data as insignificant or have difficulties to implement these data into their models.
2. Objective and motivation
The main objective of the study is to create complete set of river outflow data from Japanese basins to western Pacific ocean, in order that the data can be used in bigger and more complex coastal and climatological models, so that these models can develop more precise calculations and expand its purposes to wider range.
Secondary objective of the study is to predict sediment runoff at the catchment scale near river mouth, in order that it can be used in river basin management for sediment related disaster risk reduction.
River discharge data likely represent the most accurate quantitative information about the global terrestrial water cycle, but this information has not been uniformly adopted in Earth Systems studies, such as GCMs or terrestrial productivity models (Fekete et al., 2002). To estimate continental discharge using the runoff fields, a river transport model that routes the terrestrial runoff into the correct river mouths is needed (Dai and Trenberth, 2002).
3. Methods and data collection
We have used cell distributed water and sediment runoff model (Sasaki, 2014) (Apip et al., 2011) to make numerical prediction of freshwater outflow and suspended sediment transport from each basin. A conceptual diagram of the sediment runoff model is shown in Figure 1.
All data was collected from online source of Ministry of Land, Infrastructure, Transport and Tourism (http://www1.river.go.jp/). For all rivers, we tried to collect the most downstream daily discharge and water level data station which was available. Our goal was to collect discharge and water level data for period 2008-2015 for all rivers, and for period 2000-2015 for two the biggest rivers Tone and Abukuma.
4. Discussions
The overview of all the collected data from 9 first class rivers on Japanese eastern Pacific coast will be discussed. Takase river had average discharge 23 m^3/s with peak 388 m^3/s. Mabechi river had average discharge 94 m^3/s with peak 1246 m^3/s. Kitakami river had average discharge 304 m^3/s with peak 3409 m^3/s. Naruse river had average discharge 45 m^3/s with peak 2198 m^3/s. Natori river had average discharge 292 m^3/s with peak 1340 m^3/s. Abukuma river had average discharge 202 m^3/s with peak 4822 m^3/s. Kuji river had average discharge 18 m^3/s with peak 1575 m^3/s. Naka river had average discharge 385 m^3/s with peak 2533 m^3/s. Tone river had average discharge 253 m^3/s with peak 7055 m^3/s.

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