
[EJ] Eveningポスター発表 | セッション記号 A (大気水圏科学) | A-OS 海洋科学・海洋環境

[A-OS14] 陸域と海洋をつなぐ水循環の素過程

コンビーナ:木田 新一郎(九州大学・応用力学研究所)、山崎 大(東京大学生産技術研究所)、三寺 史夫(北海道大学低温科学研究所、共同)、山敷 庸亮(京都大学大学院総合生存学館)

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陸域の気象場と海洋の循環場は河川水を通じて繋がっており、大規模スケールで起こる淡水循環は近年、衛星観測や数値モデルなどを通じて急速にその実態が明らかになりつつある。本セッションでは地表面流出、河川の流量変動・洪水、そしてデルタ地帯などのエスチュアリーや海洋で起こる水塊交換・河川プリュームの形成、など陸域と海洋をつなぐ水循環に関わる力学・物質循環の素過程に関する研究成果を数値モデル・観測・理論を問わず募集する。

[AOS14-P05] 全球河川モデルによる沿岸域氾濫シミュレーションにネスティング手法の導入が及ぼす影響の評価

*池内 寛明¹、平林 由希子²、山崎 大² (1.東京大学大学院工学系研究科、2.東京大学生産技術研究所)

Deltas and estuaries in the world have been vulnerable to flood risks. Mega delta regions hold societal and economic significance due to the large populations and the co-occurrence of multiple flood disasters. Global flood models (GFMs) are useful to estimate flood risk in mega deltas. Most of them employ 1D river flow equations, meaning that they can be used to conduct hydrodynamic simulation with the entire drainage areas of deltas. However, it is challenging to model flood inundation in estuaries and deltas due to the complex water flow processes there. It is especially the case of interaction between fluvial and coastal flood processes. While The inclusion of 2D inundation processes can help to address this issue, to use 2D models for large-scale inundation simulations is computationally heavy. A nested modelling, meaning to use a local 2D model forced by a global model, can be a solution.

The objective of this study is application of a nesting method for improving flood modelling in estuaries and deltas with a GFMs's framework. We utilize the global river routing model CaMa-Flood and the 1D/2D hydrodynamic model Delft3D Flexible Mesh. The Delft3D Flexible Mesh models is constructed. The simulation domain is set to include the river mouth and coastal deltas, forced by daily river discharge upstream calculated by CaMa-Flood. We present the first results of the study, showing improved simulations of flood inundation estimations for Bangladesh. Some different model configurations, such as CaMa-Flood runs with and without Delft3D Flexible Mesh, are tested and the results were quantitatively compared with observed discharge and flood inundation extent.