

ParBreZo - a rapid, high-resolution flood inundation modeling software

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BRIEF DESCRIPTION

By mid-century, flooding is predicted to cause annual losses of \$52 billion. The ParBreZo v.8.0 software developed at UCI can predict flood inundation at better than 30 feet resolution, and within a short span of time. These predictions will help plan and prepare for future floods, respond intelligently to on-going flooding, and learn from past floods.

FULL DESCRIPTION

The algorithm used in ParBreZo v.8.0 is highly stable, i.e. any errors introduced into the calculations for flood inundation are not amplified. By using an innovative computational algorithm, and accelerating runs on parallel computing architecture, it exhibits a high level of accuracy relative to the low computational cost. ParBreZo v.8.0 is one of few software than can simulate flood dynamics due to unusual reasons, going beyond rainfall and coastal tides, e.g. dam-breaks. Unprecedented fine-tuning of multiple input parameters insures more accurate results. ParBreZo accurately meshes and represents different terrains and geographical regions. For these reasons, ParBreZo is superior to other software for flood inundation modeling and predictions.

SUGGESTED USES

- Predict and evaluate baseline flood risk conditions; plan and monitor progress of flood risk reduction activities
- Inform and prioritize investment decisions, including those towards flood response and mitigation strategies
- Assess historical, current and future risks to better explain and market flood insurance to potential clients
- Assess risks to global manufacturing facilities and supply chains and prioritize sites for risk mitigation actions
- Assess impacts of flooding to distributed networks such as transportation, communication and power systems

ADVANTAGES

- Platform-independent and intuitive User-Interface guarantees high adoption and end-user satisfaction
- Software acceleration on multi-threaded computer architecture allows predictions to keep up with changing weather
- High resolution of predictions (better than 30 feet) insures even individuals with small landholdings will benefit
- Higher stability of results, as well as -higher accuracy makes it a superior alternative to competing software

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OTHER INFORMATION

CATEGORIZED AS

- » Computer
- » Software

RELATED CASES

2017-424-0

STATE OF DEVELOPMENT

BreZo, an earlier iteration to ParBreZo has been used for research purposes. The Everest Study (2010-2011) is a famous study case for BreZo, wherein it was used it to understand and mitigate flooding of Balboa Island, off the coast of Newport Beach, CA. A fully functional, updated and upgraded version, PreBreZo v.8.0 is available for licensing.

RELATED MATERIALS

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» Gallien, T.W., Barnard, P.L., van Ormondt, M., Foxgrover, A. and Sanders, B.F. A parcel-scale coastal flood forecasting prototype for a southern California urbanized embayment, Journal of Coastal Research, 29(3), 642-656, 2013 - 05/01/2013

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