

*Dear Governor,*

I hereby propose for the creation of a Flood Inundation Modelling and Planning Center (FIMPC) for state-level flood prediction and management in Florida.

Florida is now exposed to more severe and prevalent flood risk than in the past decades. With climate change, the sea level is rising, and the weather is becoming more extreme. Such challenges demand an integrated flood risk management plan based on accurate and generalizable predictions, which is beyond the planning capacity and resources of most local governments. By establishing the FIMPC, the state government will be able to assign tax revenues and federal funds to the critical areas, as well as better coordinate regional flood infrastructures and future developments.

The FIMPC will be directly responsible for the governor, and work closely with state departments (i.e. the Florida Department of Environmental Protection) and regional planning institutes (i.e. the South Florida Water Management District). Staff in the FIMPC should be able to conduct comprehensive flood risk predictions for diverse hydrological environments (i.e. tidal flood, storm-surge flood, pluvial flood and riverine flood) and different development scenarios. These models will be developed by combing hydrological condition predictions with hydrological system simulations. To build and maintain these models, our technical team will include meteorologists, hydrologists (oceanographers), geologists, data scientists and cartographers. The center will build strong partnerships with regional and national research institutes (i.e. NASA, US Geological Survey, etc.) to obtain data and learn about trends (i.e. climate change, sea level rise, etc.). Critical data such as precipitation and temperature will be updated on daily bases, while other less time-dependent data (i.e. soil type, land use) will be regularly renewed according to the schedules of corresponding agencies. The center will also establish and maintain a dataset of historic and ongoing flood events in Florida to cross validate the prediction model and conduct adjustments as necessary.

The prediction results of the FIMPC models will be processed into policy memos and proposals, which will be reviewed by a special commission under the lead of the governor. The board members will either be elected representatives from the cities (and counties) or be appointed officials by the governor, and will be responsible to develop comprehensive flood management plans and other policy tools. The FIMPC will also provide interactive deliverables such as web maps and mobile APPs, which will help Florida residents to learn about potential flood risks near them. By cooperating with real estate developers and insurance companies, the modelling results can be integrated into home buying platforms, thus setting a premium to avoid future flood risk.

Last but not least, the FIMPC will strive to eliminate the political barriers that stand in its way of having real agency. Although the state-level planning does not have power over local governments, there are plenty of policy tools to enforce the flood management recommendations. For instance, flood insurance may act as an anchor to encourage local land use adjustment by providing state-level funds for neighborhoods acting according to the FIMPC flood risk map.