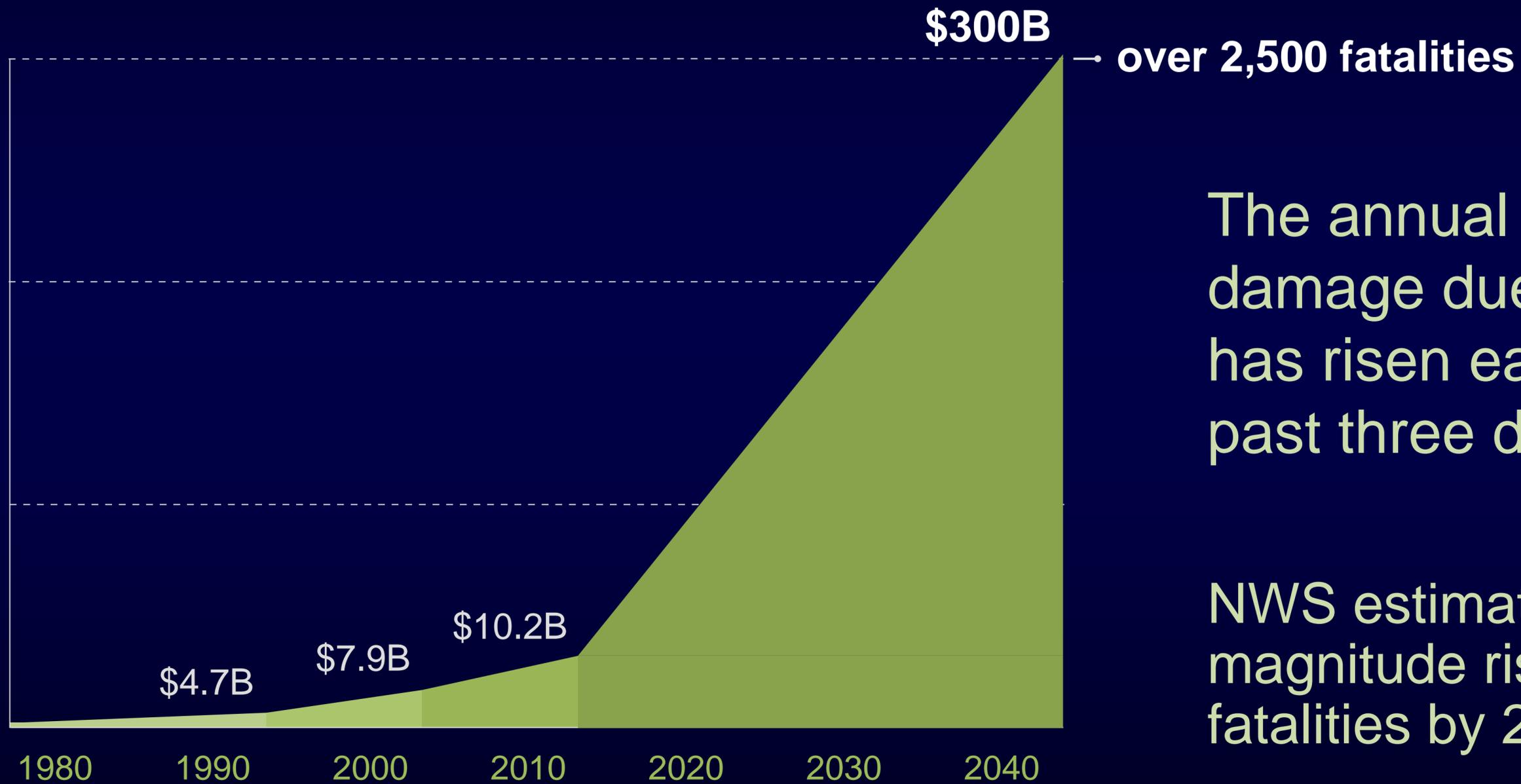




# FLASH FLOOD FACTS



The annual average damage due to flooding has risen each of the past three decades.

NWS estimates > order of magnitude rise in \$ and fatalities by 2040



50:50



How can the NWS most effectively communicate flash flood risks?

**A:** Advisory

**B:** Watch

**C:** Warning

**D:** None of the Above



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Heavy Rain



Debris Flow



Ice Jam



Dam Break/  
Levee Failure



Urban Flooding

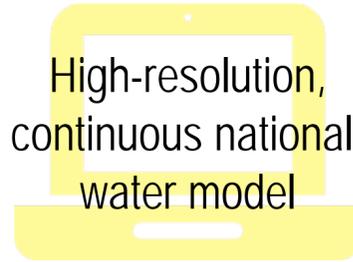
# OBSERVATION & MONITORING

Seamlessly integrated observation and monitoring networks



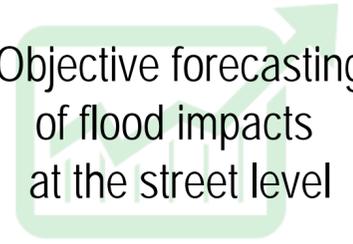
# MODELING

High-resolution, continuous national water model



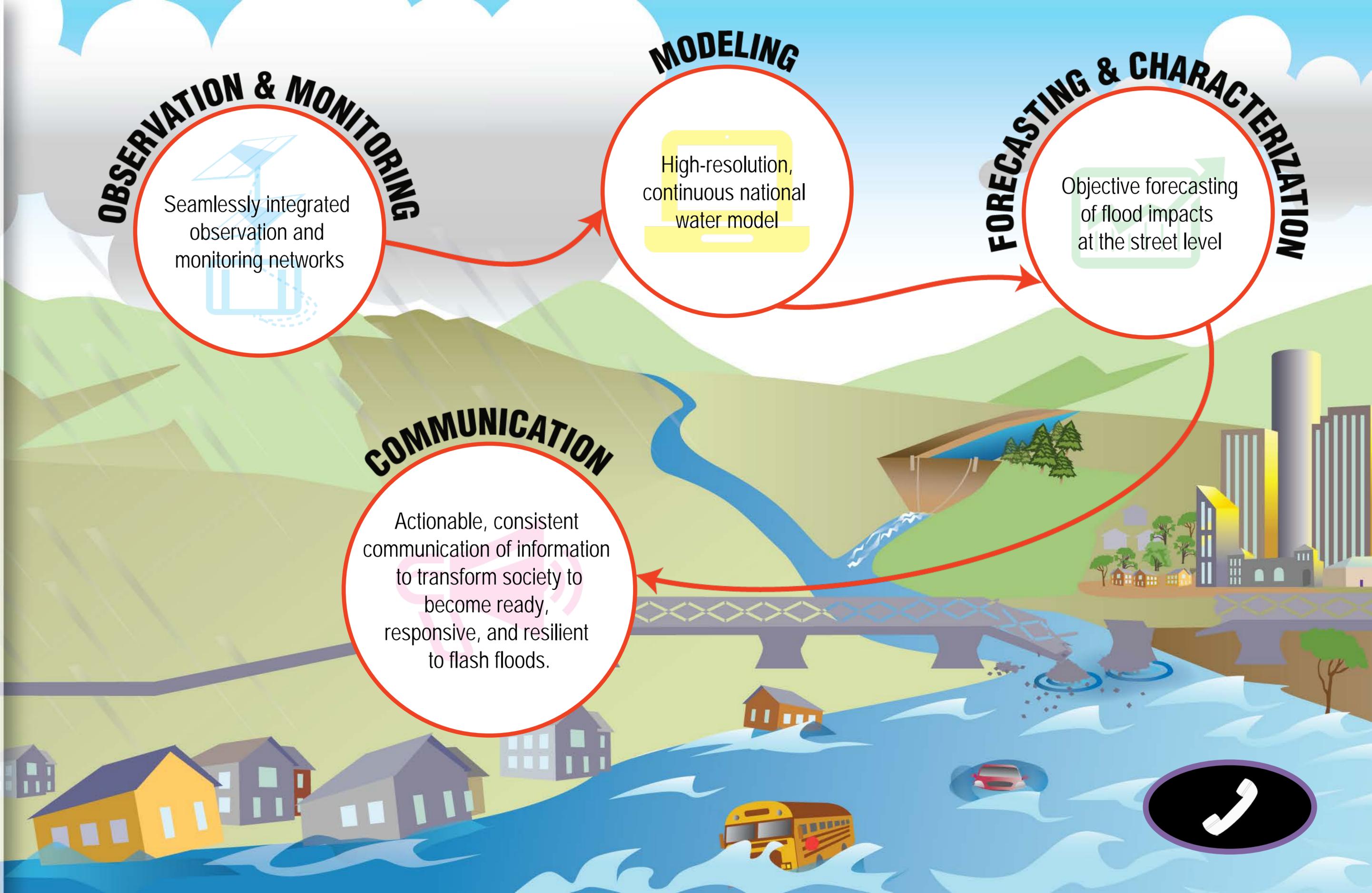
# FORECASTING & CHARACTERIZATION

Objective forecasting of flood impacts at the street level



# COMMUNICATION

Actionable, consistent communication of information to transform society to become ready, responsive, and resilient to flash floods.





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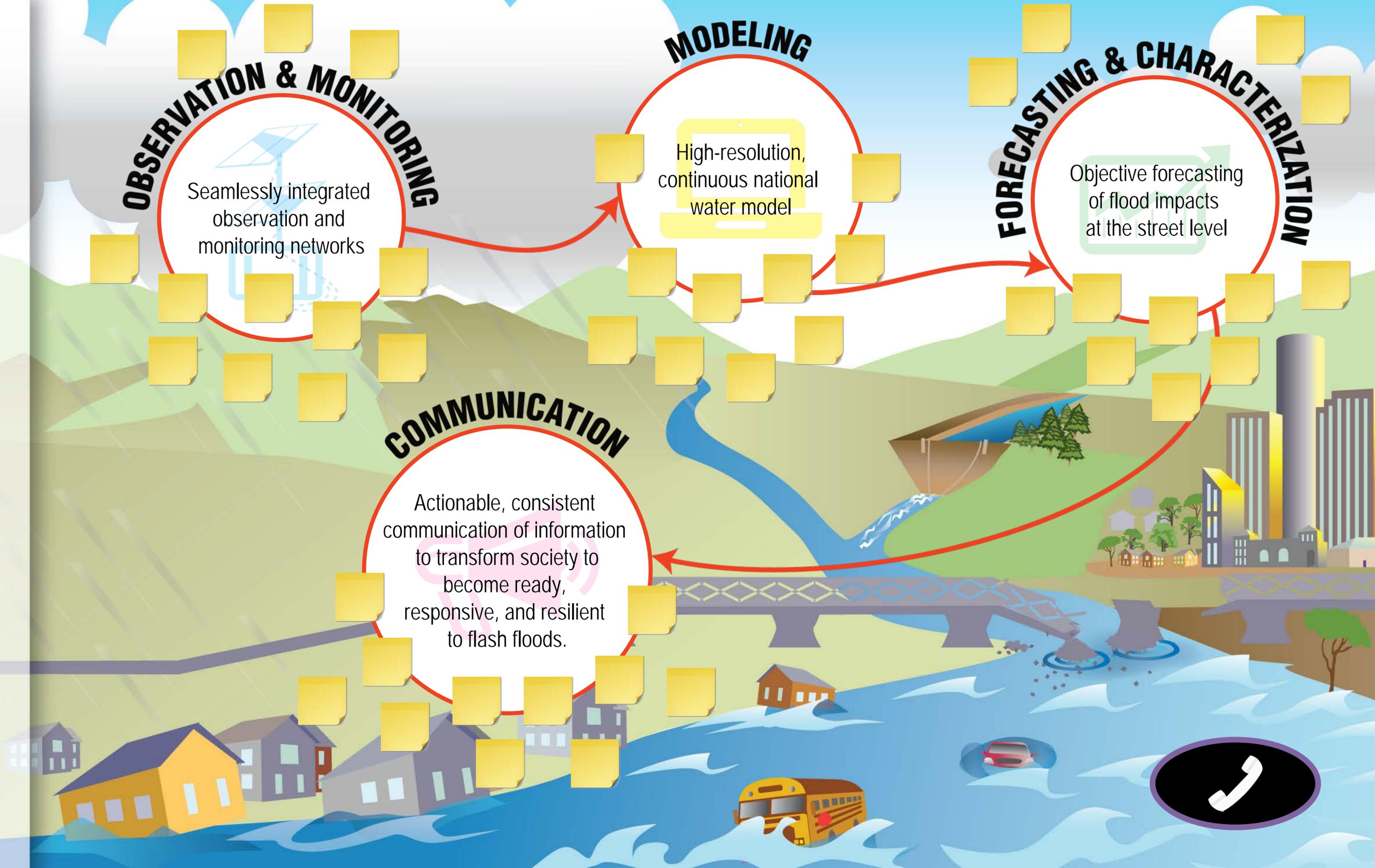
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# OBSERVATION & MONITORING

- Comprehensive cross-agency database
- Robust observation network
- Uniform data formatting

# MODELING

- High-res, spatial-temporal ensemble model
- Incorporate observational data
- Verification ability

# FORECASTING & CHARACTERIZATION

- Criteria for debris flow
- Tools for forecasting natural
- Hazard impacts

# COMMUNICATION



50:50



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MODELING

# COMMUNICATION

FORECASTING & CHARACTERIZATION

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- Tools for forecasting natural
- Hazard impacts

- Ongoing, research-supported, effective outreach and education
- Mine real-time data to synthesize and communicate impacts
- Define and develop research-supported, effective delivery mechanisms
- Identify and develop effective event-scale risk communication content



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Focus Groups were held in:

- Austin, Texas
- Boulder, Colorado
- Binghamton, New York
- Chicago, Illinois
- Mobile, Alabama

communication of information to transform society to become ready, responsive, and resilient to flash floods.



# AND THE AUDIENCE SAID...

- ▶ Improve graphics – Streets, not polygons!
- ▶ Provide historical context – Reference past event people remember!
- ▶ Convey actionable information – Safe routes not just flooded ones!
- ▶ Mobile devices – Need to reach people in vehicles!
- ▶ Personalize the message – Use familiar voice during event!
- ▶ Use words based on how people perceive risk – Rethink the current system of advisory/watch/warning! It's not working....



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Did we take their advice?

**A:** Yes

**B:** No

**C:** Maybe

**D:** Thought about it



50:50



Did we take their advice?

**A:** Yes

**B:** No

**C:** Maybe

**D:** Thought about it

# YES!

- ▶ Simplify flash flooding messaging (e.g., rethink watch/warning system) and disseminate actionable information via ways people obtain it (apps, mobile devices, social media).
- ▶ Increase specificity on the “when, where and how much” flooding by improving modeling capacity to create for higher resolution products.
- ▶ Continue to foster and cultivate strong WFO-local partner relationships.

