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Disaster Dynamics: Hurricane Landfall National Center for Atmospheric Research (NCAR), Institute for the Study of Society and Environment (ISSE), Boulder, CO

The Disaster Dynamics Project

Transforms descriptive case studies into interactive tools for secondary, undergraduate, and professional education

Teaches concepts of complexity, resilience, and adaptation

Contributes to the design of hazard resistant and resilient communities

Target Audience

Students (Grades 7-12)

Undergraduates

Distance Education Students

Future Emergency Managers

Urban Planners



Decision-Making Under Uncertainty

• The Precautionary Principle Making Tough Choices

 Planning and Balance Growth and Hazard Infinite Games

Lessons Taught

 Addressing Root Causes Managing Limited Resources Problem-Solving and Negotiation

 Holistic Considerations Long-Term Consequences Complexity, Systems Thinking

Overview

The Hurricane Landfall game is a computer strategy game about the interaction between natural hazards and human decisions. It focuses on urban development and land use planning in a fictional Gulf Coast barrier island community.

As the players negotiate their town's response to extreme events, they learn real-world lessons about planning for disaster resistance and resilience, systems thinking, sustainability, and the value of a holistic worldview.



Instructional Support

Observe and comment on games as they are played

Post-game summary for debriefing and discussion

In-game explanations of important game concepts

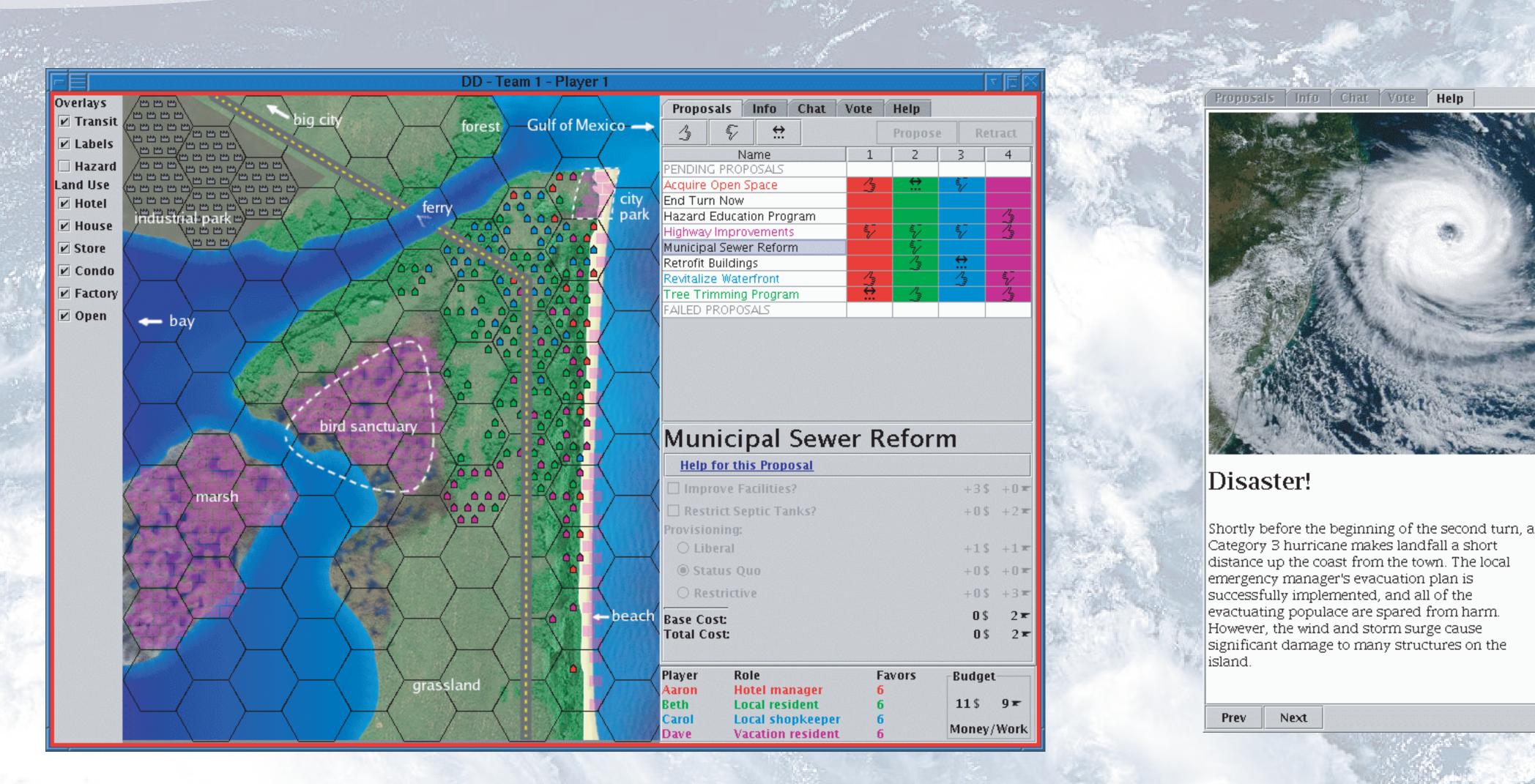
Extensive Support Website:

- Teaching Points
- Lesson Guidance
- Gameplay Tutorial
- Troubleshooting Tips
- Library of Links to Related K-12 Websites

Technical Java-based – runs on Windows, Mac, or Linux

Requires internet access

FREE!



Each player takes on a role representing one of the interests in a barrier island community.

Propo	sals	Info	Chat	Vote	Help		
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	N	Jame		1	2	3	4
PENDIN	g pro	POSALS					
Acquire Open Space			- 4	⇔	ų sp		
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Highway Improvements				5	Ę	13	
Municipal Sewer Reform							
Retrofit Buildings							
Revitalize Waterfront			13		4	Ę.	
Tree Tr	imming	g Prograi	n		1		
FAILED PROPOSALS							

...they must negotiate with one another...

Game Over

Congratulations! You've made it to the end of the game.

Final Scores:

Hotel			
House			
Store			
Condo			
Ecology			
Hazard			
Scale:	0	0.5	

Here's how your city compares to the results of more than 10,000 simulated games:

Your ecology score is in the 60th percentile Average: 0.65 (high score is good, low score is bad)

Your hazard score is in the 80th percentile Average: 0.48 (high score is bad, low score is good)

Take some time to reflect on the outcome. Are you satisfied with where you ended up? Is it where you expected to be?

...to solve the town's problems and experience the long-term consequences of their decisions.



...choose the best policy options...

Revitalize Waterfront

Redevelop the old industrial waterfront near the city's center into an attractive commercial district. Businesses of all types favor this proposal. Public Facilities?

Spend extra money to build public facilities that will draw tourists, like piers, marinas, and pedestrian

Relax Regulations?

Redevelopment is normally encouraged by providing loans and grants to local businesses that fit the city's development plan. To reduce the cost of redevelopment, tax breaks and loosened zoning requirements can provide greater development flexibility for interested businesses.

A help system provides background information about game subjects.

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Propos	al		
	Focus: E	n de la construit de la constru	en Space
Cost:	5\$ 5×	-	
Vote			
	FOR		AGAINST
	13		5
	4	PASS	3
	13.13.13	Aaron	
		Beth	5
	3	Carol	
		Dave	55

In the aftermath of a severe storm.

...and vote how to manage their collective resources...

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ſ	Proposals Info Chat Vote Help
	Chat
	Chat Transcript
	Vacation resident (Dave): Dude! We should fix up the
	highways.
	Local shopkeeper (Carol): No way! It's too expensive. It'll use up all our money.
	Local resident (Beth): yeah, what carol said. we have to
	do something about the powerlines that the wind knocked
	down. Vacation resident (Dave): Roads!
	Hotel manager (Aaron): I like roads for tourists but we
	need beaches too
	Hotel manager (Aaron): Can we do both? Hotel manager (Aaron): How much money do we have?
	Observer: CHeck down in the lower right corner. That's
	your current budget.
	Local resident (Beth): who r u? Observer: Sorry - I'm John, the TA
	Local resident (Beth): ok tnx
	Local shopkeeper (Carol): Hotel manager, we should
	redo the waterfront instead. It's good for tourists. Hotel manager (Aaron): Ok but you hav3e to vote for
	open space.
	Vacation resident (Dave): No, highway! It make
	evacuation go better Local resident (Beth): are they paying you or something?
	are they paying you or contenting:

in-game chat supports networked play and instructor involvement.