

Terraplay:

Tangible play for science and sustainability



Rea Wolfe

Creative Artist and Game Designer
Senior in the Game Design Program
Connally High School, Pflugerville ISD

Suzanne A Pierce, PhD

Research Scientist/Lecturer
Texas Advanced Computing Center
The University of Texas at Austin

Earth-Society Systems Research Group



'All the instances of scientific development and practice . . . are as much embedded in politics and cultures as they are creations of the researchers, practitioners, and industries.'

Common Pool Resources Come into Conflict



Texas Fires Shot in Water War
— ABQ Journal, 01/09/13

Chilean senate blocks El Tatio geothermal exploration



EL TATIO
ES UNA FUENTE DE VIDA
DONDE NACEN NUESTRAS
AGUAS
TENEMOS UNA SOLA VOZ
UN SOLO CAMINO POR EL
DERECHO Y RESPETO A SEGUIR
EXISTIENDO



Common Pool Resources

Require spanning information and knowledge needs



High
Performance
Computing



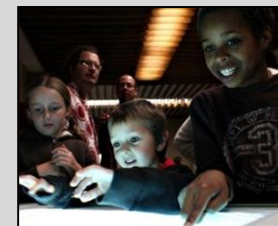
Subject
Matter
Experts



Formal
Education



Communities



Informal
Education

Broad Spectrum of Users/Contributors

Sustaining a Planet and Education

How can
science-based gaming
teach people about natural systems?



Curricula and Standards Aligned Design
for Sustainability Science
Skills based career path through digital media
Connecting Real World Data into the Game
Interactive 3D Tangibles



Remote places on Earth



There are many remote places on Earth that are difficult to visit.

Gaming offers an avenue to begin to know and understand some of these Extreme Environments.

Knowledge Centered on a Case Study

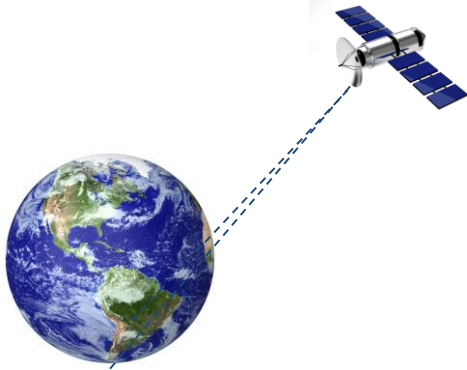


Science - Biophysical

Field observations of
geyser basin temp,
geochemical/microbial
sampling
Satellite data

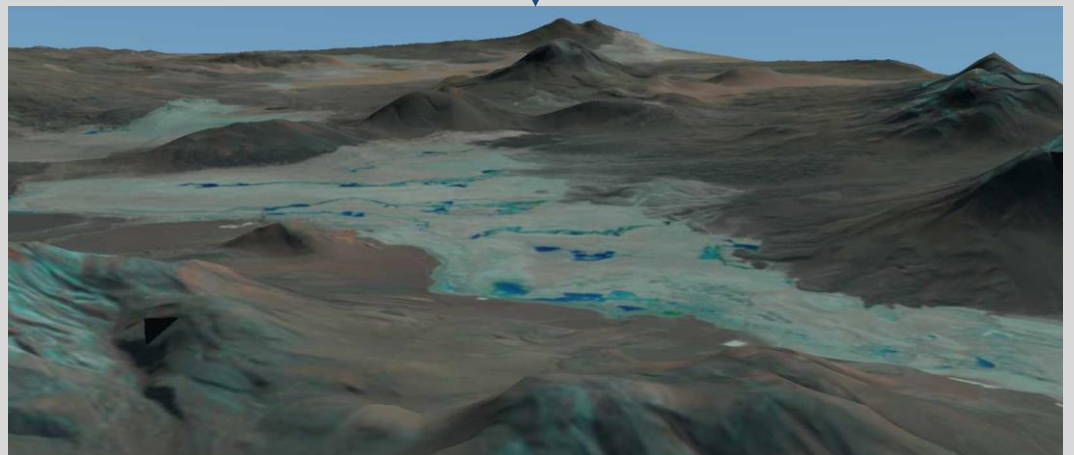
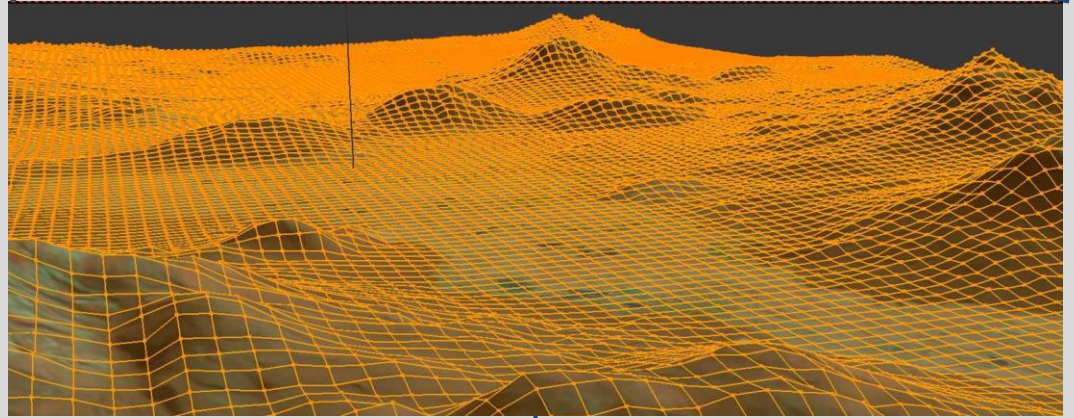


Creating an Immersive Environment

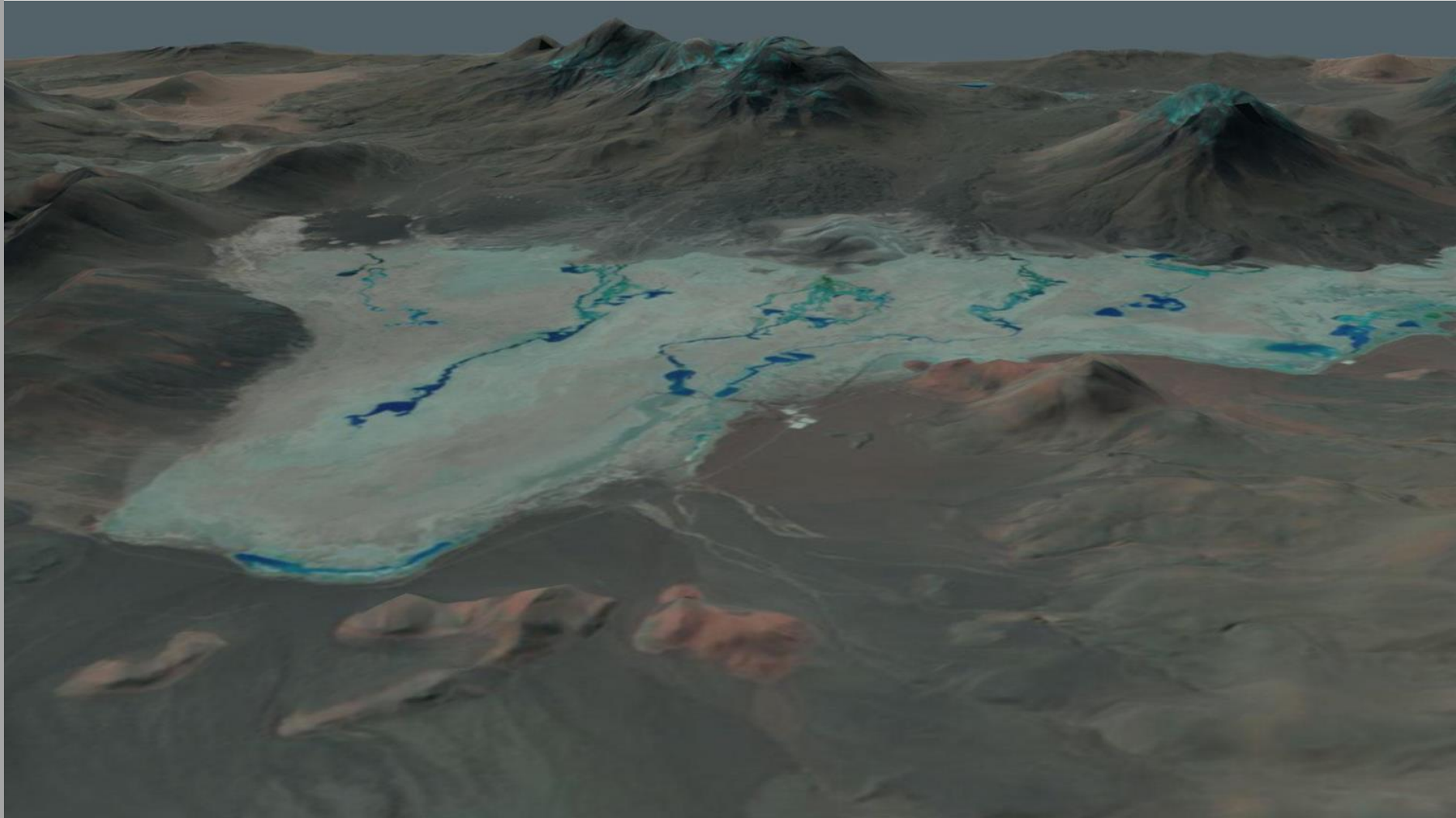


The game environment is based on satellite data

- 1) The team downloads the data (NASA)
- 2) Imports it into a game engine platform (Unity)
- 3) Colorizes and Shades the surface from photos and Landsat imagery



Now we have a Playground!



From Concept to Character



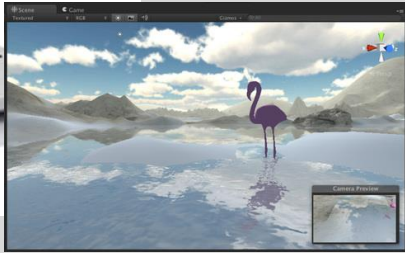
Characters and Stories



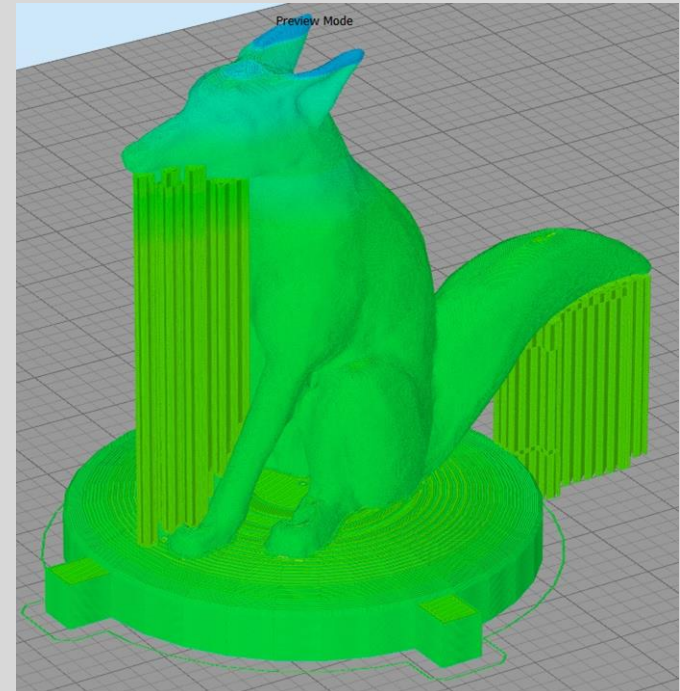
Native Species and Relationship to Resources



Educational facets of Socio-technical Environments



Educational facets of Socio-technical Environments



Pedagogical Objectives
Domain Simulation
Tangibles with NFC tags

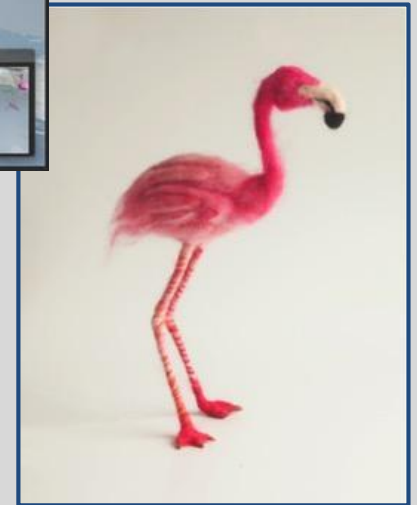
Connecting back to Community



- Design culturally relevant products
- Develop training for craft and technology skills



- Capture objects with scientific and cultural relevance



Sponsors

- Fulbright NEXUS Program, US Department of State
- Geology Foundation, Jackson School of Geosciences
- Startup-Chile and Longhorn Fund for Innovation

Collaborators:

- Jordan Sharp and David Conover, Connally High School, Pflugerville, TX
- Felipe and Andres Del Rio, Taumatropo, Chile
- Eugenio Figueroa, Universidad de Chile
- Sandeep Kumar, TechRanch Austin
- John Gentle, Texas Advanced Computing Center

Thank You!

