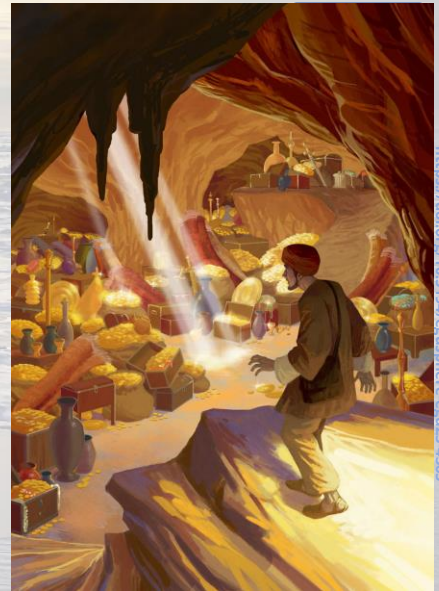


# An Ali Baba Cave of simulation/game & debriefing treasures

- Chests & hoards (collections)
- Pots (games, debriefing)
- Hordes (orgs/assoc)
- Hunts (events)



https://doi.org/10.5194/egusphere-egu23-4365



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# Sources of geo-simulation/game (GSG) resources

D Crookall & P Promduangsri, EGU23-4365, Session EOS1.3,

<https://doi.org/10.5194/egusphere-egu23-4365>



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3 Sources of geo-simulation/game (GSG) resources D Crookall & P Promduangsri, EGU23-4365, Session EOS1.3 3 / 36

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4 Sources of geo-simulation/game (GSG) resources D Crookall & P Promduangsri, EGU23-4365, Session EOS1.3 4 / 36

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# Orgs



International Simulation and Gaming Association <https://isaga.com/>



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<https://www.isagagamesforsustainability.com/>



Marieke de Wijse-van Heeswijk



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# Org

Games for Geoscience - Gaming Environments

<https://www.linkedin.com/groups/12005675/>



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# Event

International Simulation and Gaming Association



## 54th ISAGA Conference, La Rochelle

Simulation and Gaming for social and environmental transitions

[www.isaga2023.com](http://www.isaga2023.com)

Nicolas Becu



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Sources of geo-simulation/game (GSG) resources

D Crookall & P

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# Collections of geo-games



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## Collection - Sustainability & Social

### GAMES 4 SUSTAINABILITY

<https://games4sustainability.org/>



<https://socialsimulations.org/>



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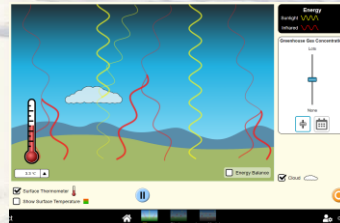
## Collection - PhET



• <https://phet.colorado.edu>

• <https://phet.colorado.edu/en/simulations/filter?subjects=earth-science>

• <https://phet.colorado.edu/sims/html/greenhouse-effect/latest/greenhouse-effect.en.html>



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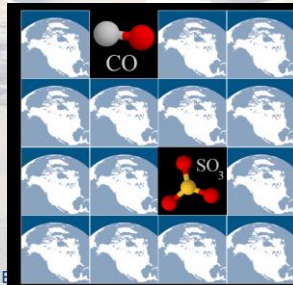
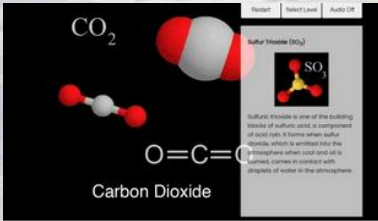


## Collection - UCAR

### The UCAR Center for Science Education

A collection of games and simulations related to weather, climate, atmospheric science, and space weather education.

<https://scied.ucar.edu/interactive>



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## Collection - LEAF

LEAF has implemented projects and run workshops all over the world with a variety of stakeholders.

Strategy games

<https://leafic.ch/resources/our-games/>



**Planet C: Generic Trade-Off Game**



**MineSet: (Forest) Landscape Game**



**Agriforest: Community Land use Game**



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# Collection - UCS

## UCS Ulrich Creative Simulations

Develops and moderates business games for corporate sustainability and climate protection

- <http://www.ucs.ch/english/index.html>
- [https://ucs.ch.translate.google/?x\\_tr\\_sch=http&x\\_tr\\_sl=auto&x\\_tr\\_tl=en&x\\_tr\\_hl=en-US](https://ucs.ch.translate.google/?x_tr_sch=http&x_tr_sl=auto&x_tr_tl=en&x_tr_hl=en-US)

UCS Ulrich Creative Simulations  
Dr. Markus Ulrich



postfossilCities - The game for climate-neutral Switzerland



Card game KLARTEXT – Sustainable development in Switzerland



STRATAGEM - Sustainable development and systemic connections



X-RAPTOR – Build and commission a large system in three hours



triCO2lor - personal decisions, climate and energy over generations



HEX – Communicate and use scarce resources efficiently

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# Collection - Geography games

## Geography

<http://planeta42.com/geography/>



## Geology

<http://planeta42.com/geography/geology.html>

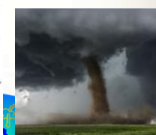


## National Geographic Resource Library

<https://education.nationalgeographic.org/resource/kahoot/>



**INTERACTIVE**  
**Human Modification to the Environment**  
 Biology, Conservation, Earth Science, Engineering, Geographic, Mathematics  
 This five question Kahoot! can be used to assess prior knowledge, or at the end of a lesson to test students' knowledge of how human modifications of the environment impact it.  
**GRADES**  
 5 - 8



**INTERACTIVE**  
**Catastrophic Weather Events**  
 Conservation, Earth Science  
 Test your knowledge of catastrophic weather events and the tools used to measure them.  
**GRADES**  
 3 - 5

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# Collection - World geography

## World geography games

<https://world-geography-games.com/>



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# Collection - Snyder, Kids

## The Search Series

[https://en.wikipedia.org/wiki/The\\_Search\\_Series](https://en.wikipedia.org/wiki/The_Search_Series)



## Geology games and activities

<https://kidsdiscover.com/teacherresources/geology-games-and-activities/>



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# Single games



Sharing is encouraged!

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# Single - IOCS

## Inter- Ocean-Climate School (IOCS)

The Inter- Ocean-Climate School brings together four content areas **oceans, coastal processes, climate change & geothics**, as well as their interrelations.

Several learning methodologies are used, including: **participatory simulation**, educational gaming, foresight & debriefing in a spirit & context of international, intercultural, interdisciplinary sharing.

Subscribe to our YT channel.

Sharing is encouraged!

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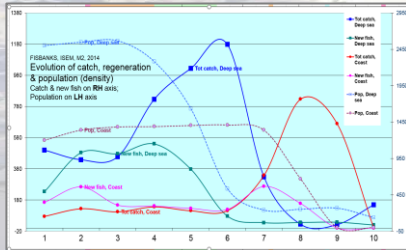
# Single - Fishbanks

## FishBanks

<http://fishbanksgame.blogspot.com/>



<https://systemdynamics.org/products/fish-banks-game/>



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# Single - En-ROADS

## Climate Interactive - En-ROADS

<https://www.climateinteractive.org/>

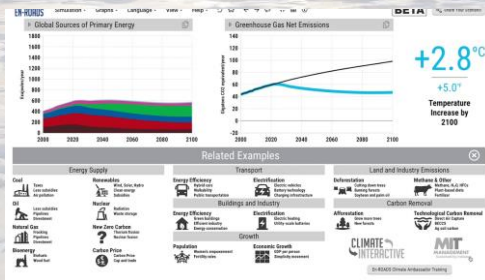


Image from <https://www.climateinteractive.org/en-roads/>

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# Single - Fresque



<https://climatefresk.org/>



<https://fresqueoceane.com/>



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# Single - WAG

## Wat-a-Game



AGRICULTURAL RESEARCH FOR DEVELOPMENT

<https://agritrop.cirad.fr/593093/>



<https://sites.google.com/site/watagame2>



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**Debriefing is the most important part of a simulation or game**

- The **learning** starts when the game stops.
- The debriefing is where the ‘**magic**’ happens (Duke, 2011).
- Simulation without including adequate debriefing is **ineffective** and even **unethical**. (Kriz, 2008)



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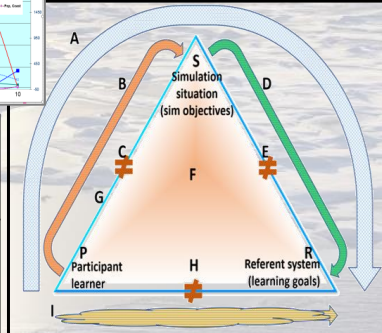
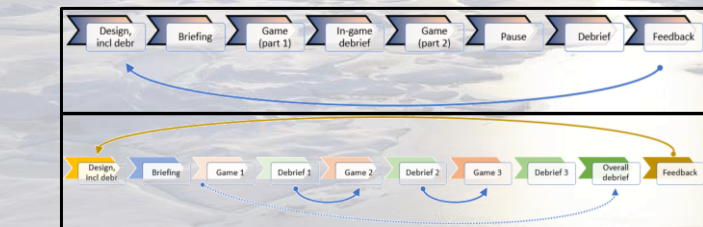
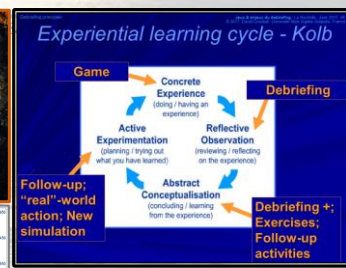
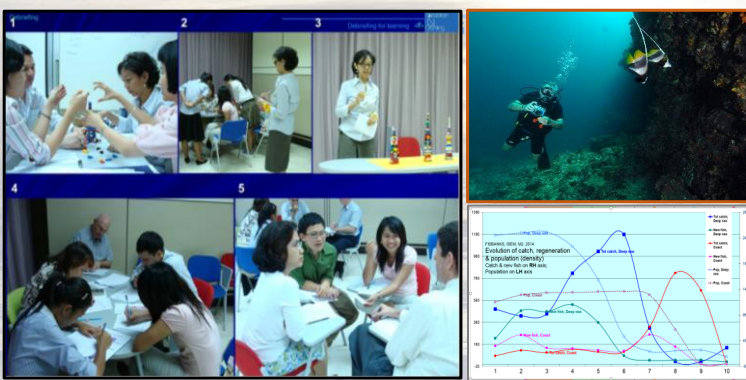
- "Debriefing can be described as an episode during a simulation and in which participants **reflect on** and **share** their **experience** with fellow participants, with the purpose of **transforming** it into **learning**."
- Debriefing resources in



- Crookall (2023). Debriefing: A practical guide  
In *Simulation for Participatory Education: Virtual Exchange and Worldwide Collaboration*. Springer.
- [https://www.researchgate.net/publication/363030661\\_Chapter\\_6\\_Debriefing\\_A\\_practical\\_guide](https://www.researchgate.net/publication/363030661_Chapter_6_Debriefing_A_practical_guide)

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## CfP

Special issue of the EGU journal  
*'Geoscience Communication'*  
on **climate and ocean education**

Signup form <https://forms.gle/wExv7amY95qHXCop8>



CfP: <https://oceansclimate.wixsite.com/oceansclimate/gc-special>



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• **Pimnutcha Promduangsri**  
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## Abstract 1/3

Games have existed almost since the dawn of ‘civilization’. “The **history** of games dates to the ancient human past. Games are an integral part of all **cultures** and are one of the oldest forms of human social interaction. Games are **formalized** expressions of play which allow people to go beyond immediate imagination and direct physical activity.

Common **features** of games include **uncertainty** of outcome, agreed upon

**rules**, competition, separate place and time, elements of fiction, elements of chance, prescribed **goals** and personal enjoyment.” (Wikipedia.)

One of the earliest modern **works** about games was Huizinga’s (1938 & 1998) *Homo Ludens*. The founding work of modern academic gaming is unquestionably Dick Duke’s (1974 & 2014) *Gaming: The Future’s Language*.)



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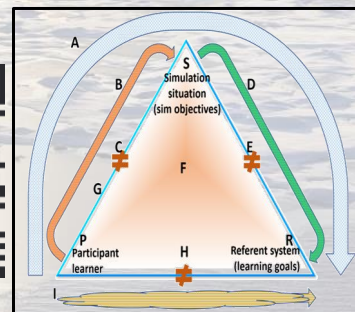


## Abstract 2/3

Since then, the **literature** on simulation/gaming (and on crucial debriefing) has exploded. Dick Duke worked in land planning, and today the gaming literature in areas related to the Earth, the environment, conservation, climate change has exploded.

This is due partly to the increase in massive and wicked problems in those areas, and due partly to the realization

that simulation/games are an, and sometimes the only, effective method (or tool) for **solving complex problems** and for providing guidance in **navigating complexity**.



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## Abstract 3/3

The result today is that geo-simulation/games GSGs are **spread across** far flung places – libraries, depositories, institutes, associations and private collections. The **geo-simulation/ gamer** (practitioner and researcher) looking for material or a method has a hard time.

This presentation will outline a few pockets where a relatively high

concentration of GSG **activity** and **materials** may be found. It will also unveil a simple database destined for GSGs, in the hope that EGU members will contribute and benefit.

**How to cite:** Crookall, D. and Promduangsri, P.: Sources of geo-simulation/game (GSG) resources, EGU General Assembly 2023, Vienna, Austria, 24–28 Apr 2023, EGU23-4365, <https://doi.org/10.5194/egusphere-egu23-4365>, 2023.


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