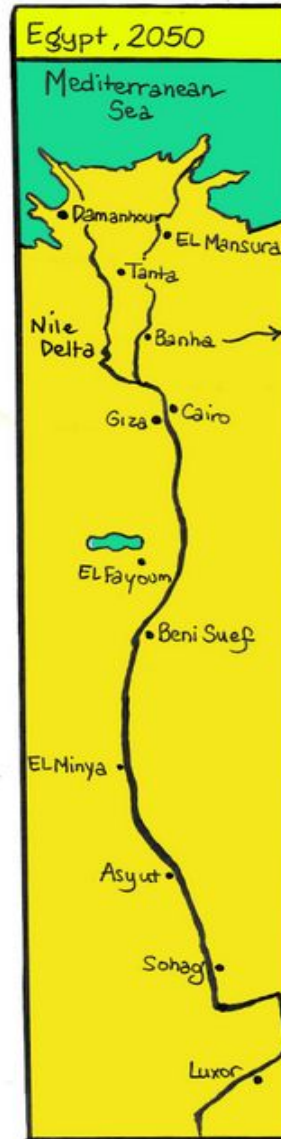




Class 1: EXPLORATION

Egypt's FiNile Solution: A Case Study

Authors: Hoda Mostafa, Mahmoud Shaltout, Sherif Osman and Tamer Shoeib



Pin the Tail on the Continent

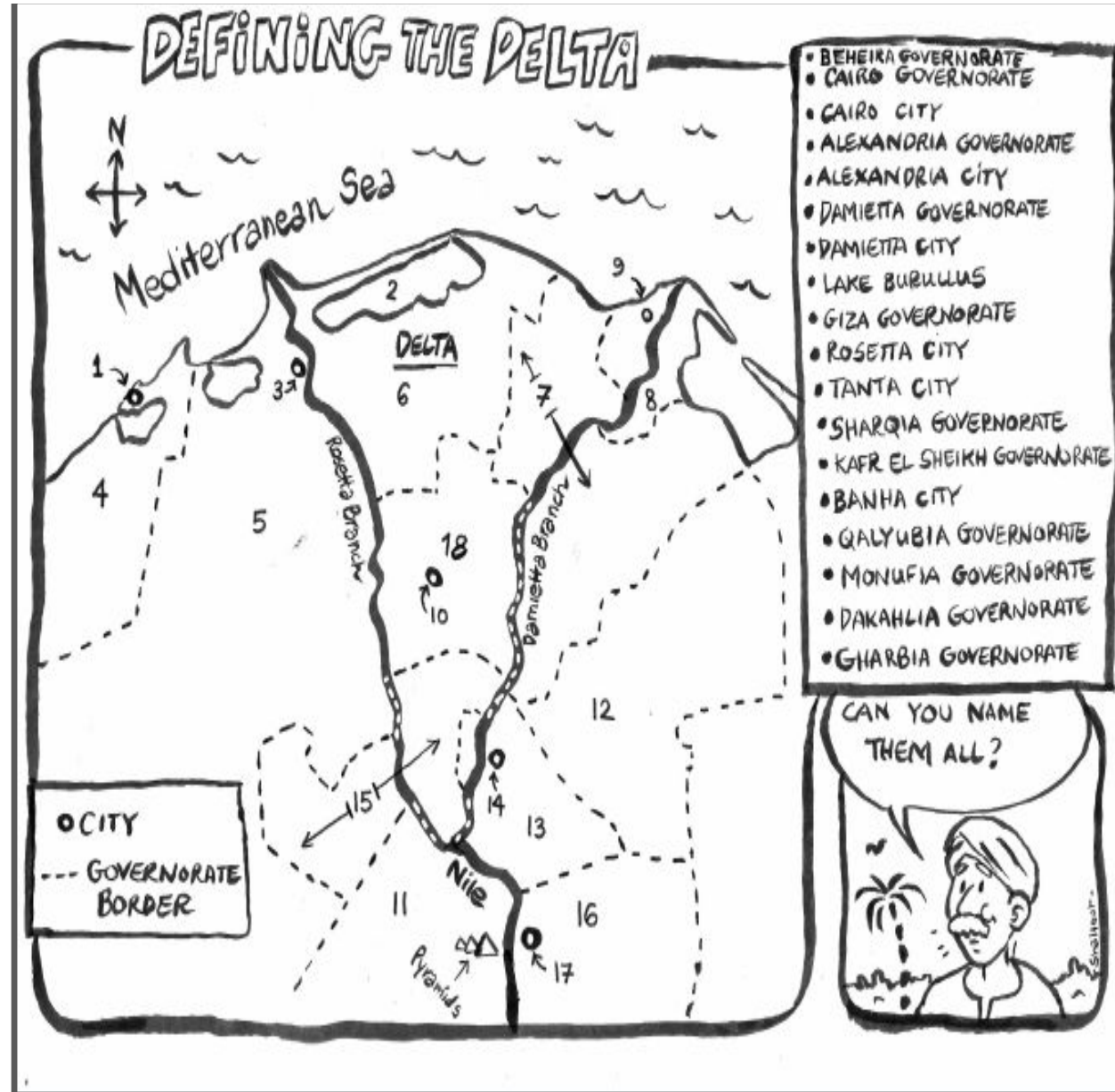
10 minutes

Alternate Version: Nile Delta



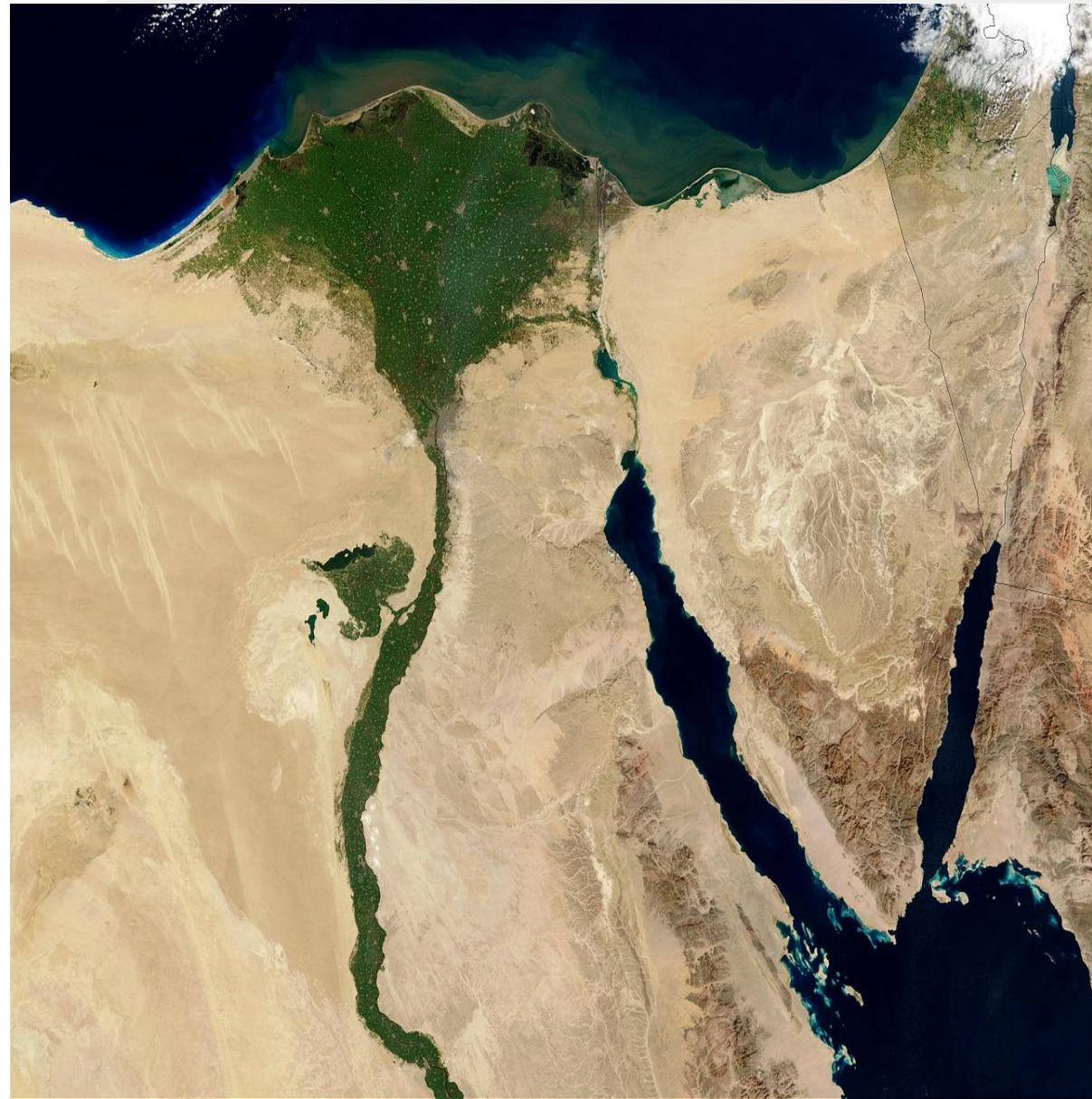
Pin the Tail on the Nile-Egypt

10 minutes



Discussion

10 minutes



Activity

Students break into groups of
4
Distribute 5 Data Sets



Instructions to Students

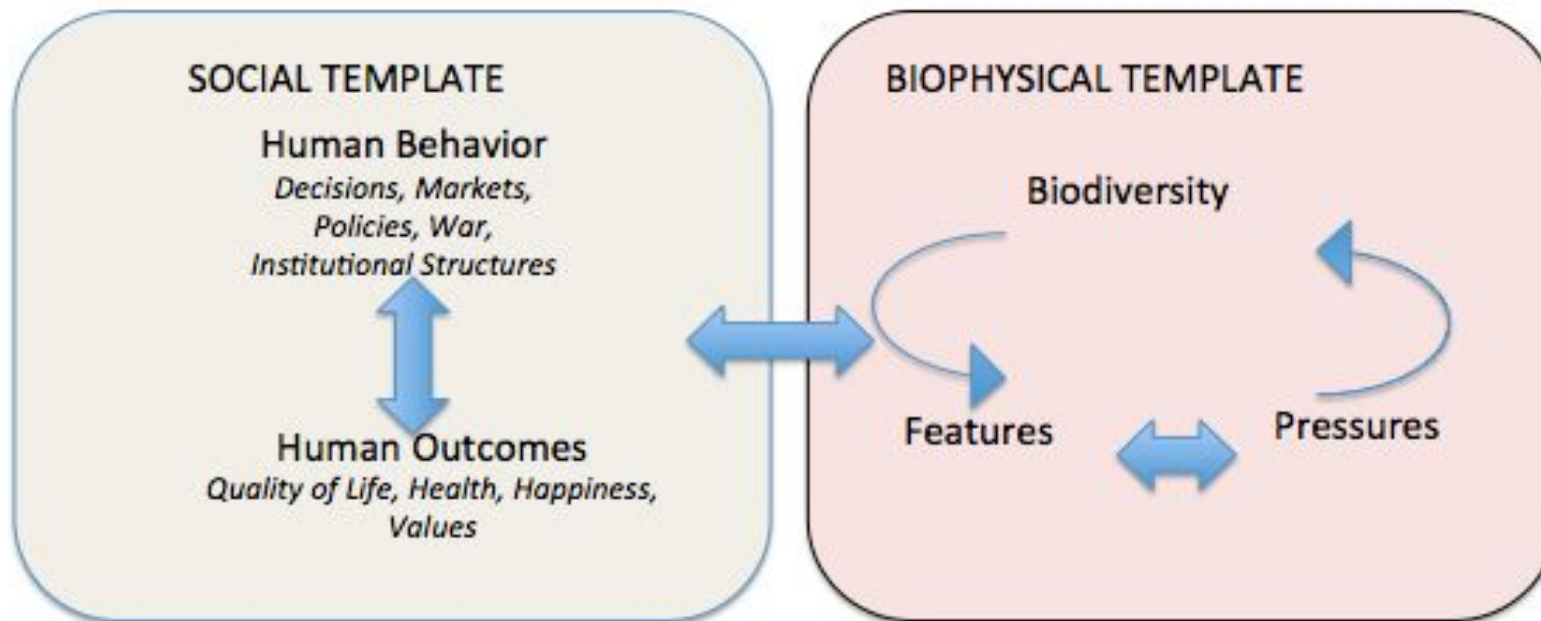
- In your groups examine your assigned dataset worksheet
- Address the key questions at the beginning of the document

SYSTEMS MAPS

Introduction to Systems Maps

10 minutes





Synthesize data, ideas, theories to understand coupled social and biophysical systems; feedbacks and nonlinear interactions common; emergent properties and surprises common.

Adapted from: Case-Studies Short Course 2016 Introduction to Synthesis and Socio-Environmental Synthesis

David Hawthorne & Margaret Palmer

CLASS SYSTEMS MAP

20 minutes

BUILD A CLASS
SYSTEMS MAP

DISCUSSION

10 minutes

SOCIAL
BIOPHYSICAL

Stakeholders

Connections

Feedback Loops

Your Assignment for Class 2

Insert due date here:

Create an individual *Systems Map* representing your current understanding of the Nile water situation in Egypt.

Use the class systems map as a guide

Bring your draft as your “ticket-in” due class 2

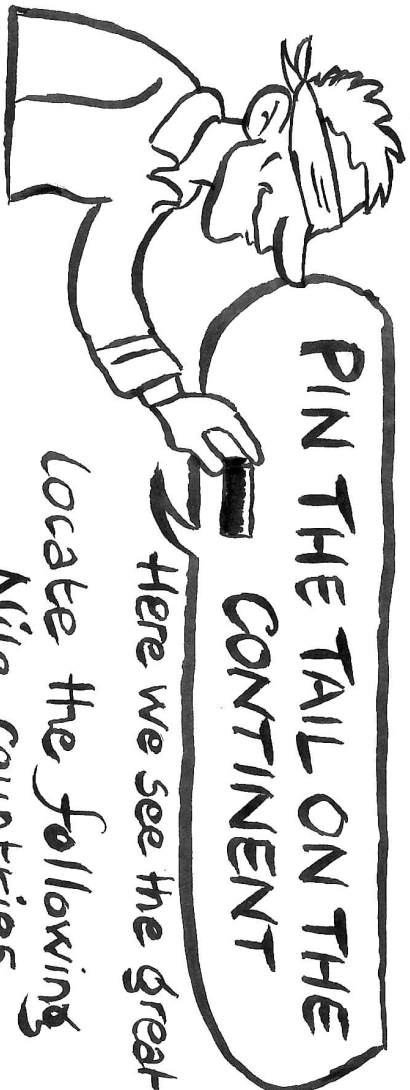
Image Credits

<https://pixabay.com/en/egypt-nile-aerial-view-land-map-11043/>

<https://pixabay.com/en/sunset-nile-egypt-river-water-78043/>

<https://pixabay.com/en/climate-change-climate-drought-1325882/>

http://arabist.net/arabawy/2008/06/15/nile_maadi/



PIN THE TAIL ON THE CONTINENT

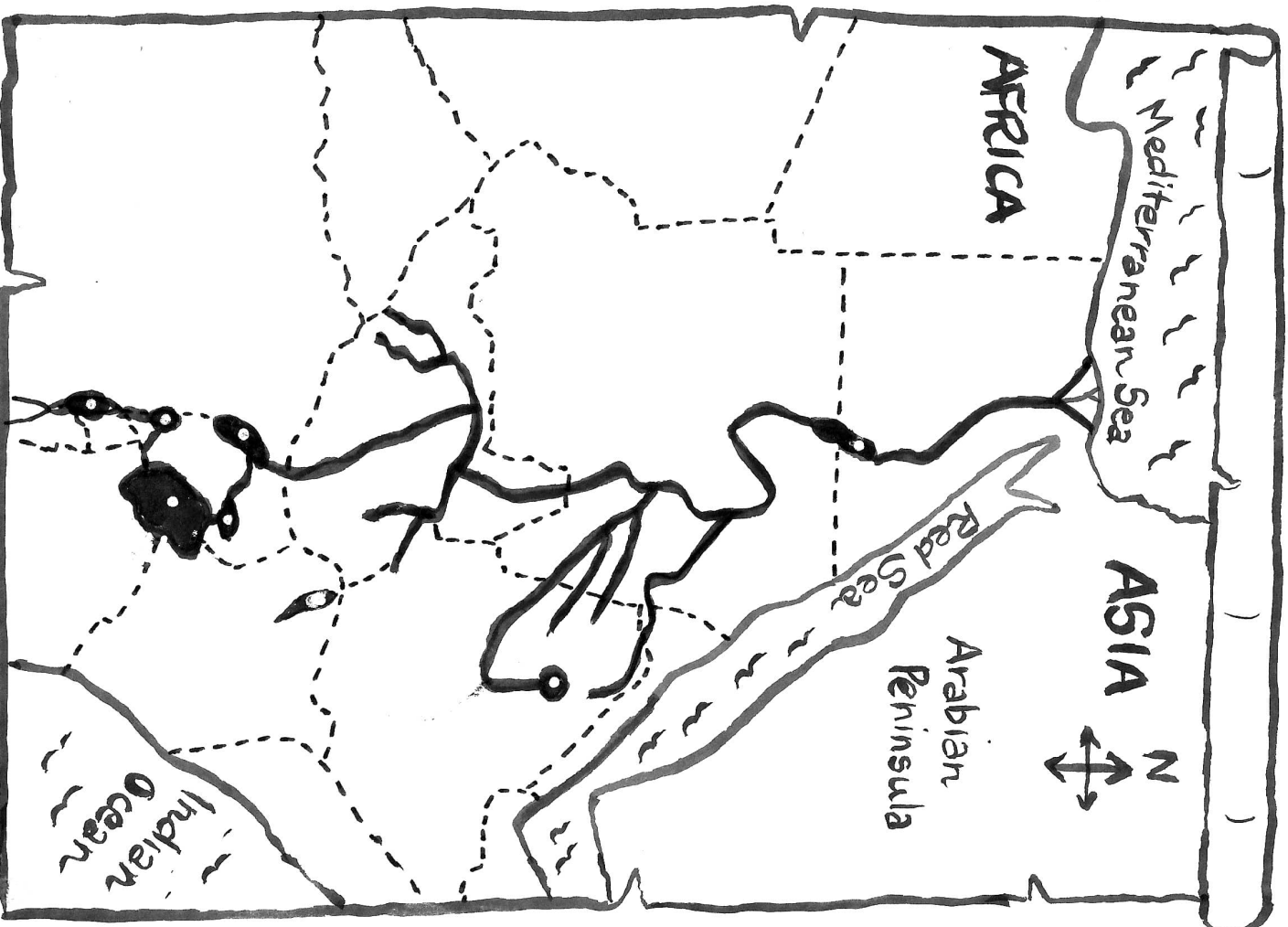
Here we see the great continent of AFRICA...

locate the following Nile countries...

Nile Branches... and Lakes

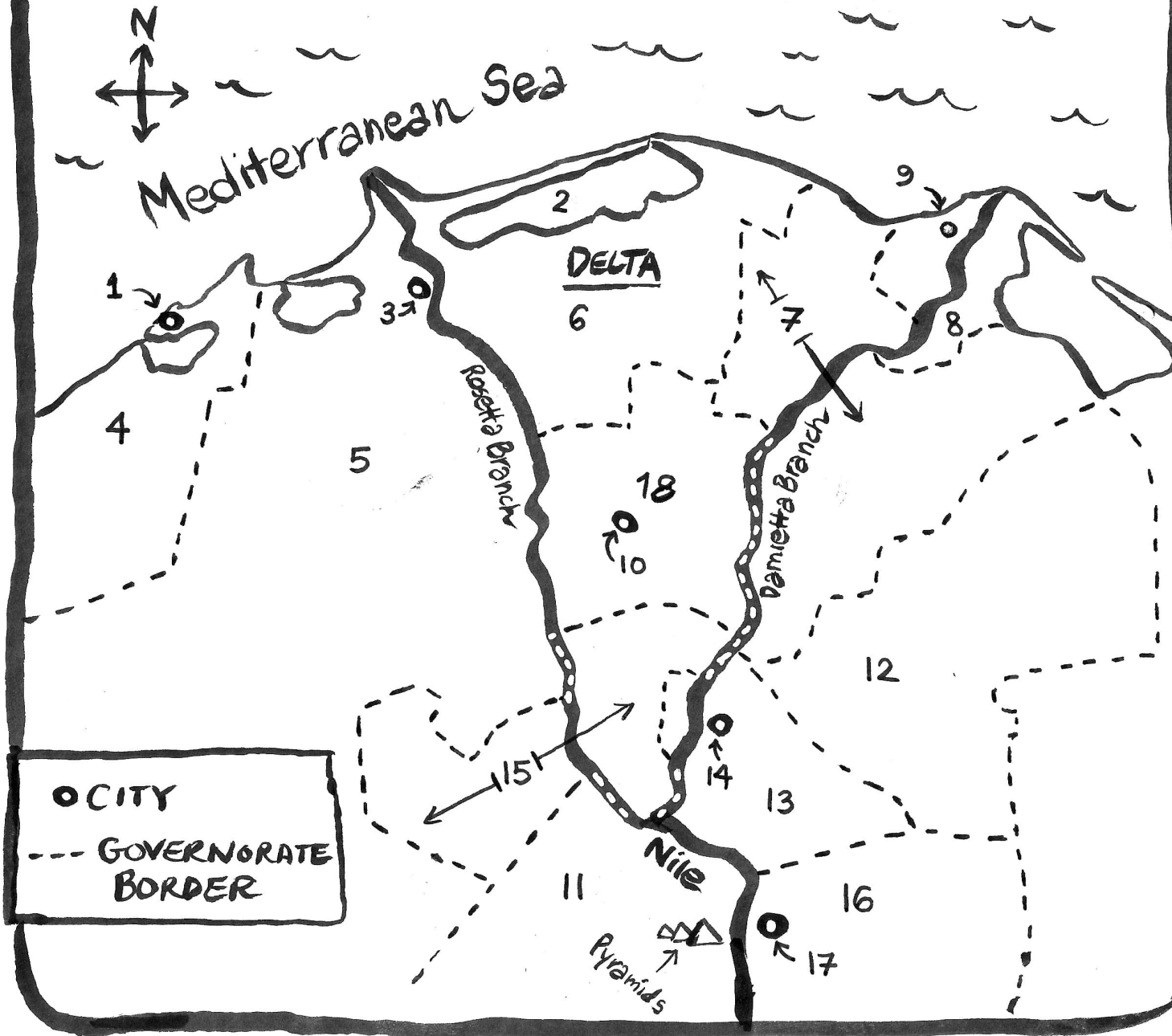
--- = BORDER

◼ = LAKE



- TANZANIA
- SUDAN
- ETHIOPIA
- SOUTH SUDAN
- UGANDA
- EGYPT
- CONGO-KINSHASA
- KENYA
- UGANDA
- RWANDA
- BURUNDI
- ERITREA
- WHITE NILE
- BLUE NILE
- LAKE TANA
- LAKE VICTORIA
- LAKE NASSER
- LAKE ALBERT
- LAKE KYOGA

DEFINING THE DELTA



- BEHEIRA GOVERNORATE
- CAIRO GOVERNORATE
- CAIRO CITY
- ALEXANDRIA GOVERNORATE
- ALEXANDRIA CITY
- DAMIETTA GOVERNORATE
- DAMIETTA CITY
- LAKE BURULLUS
- GIZA GOVERNORATE
- ROSETTA CITY
- TANTA CITY
- SHARQIA GOVERNORATE
- KAFR EL SHEIKH GOVERNORATE
- BANHA CITY
- QALYUBIA GOVERNORATE
- MONUFIA GOVERNORATE
- DAKAHLIA GOVERNORATE
- GHARBIA GOVERNORATE

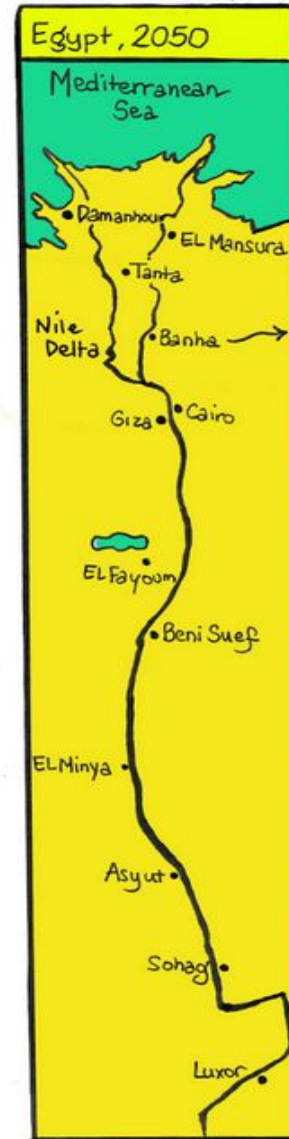




Class 2: Exploring Egypt's Relationship with Water?

Egypt's FiNile Solution: A Case Study

Authors: Hoda Mostafa, Mahmoud Shaltout, Sherif Osman and Tamer Shoeib



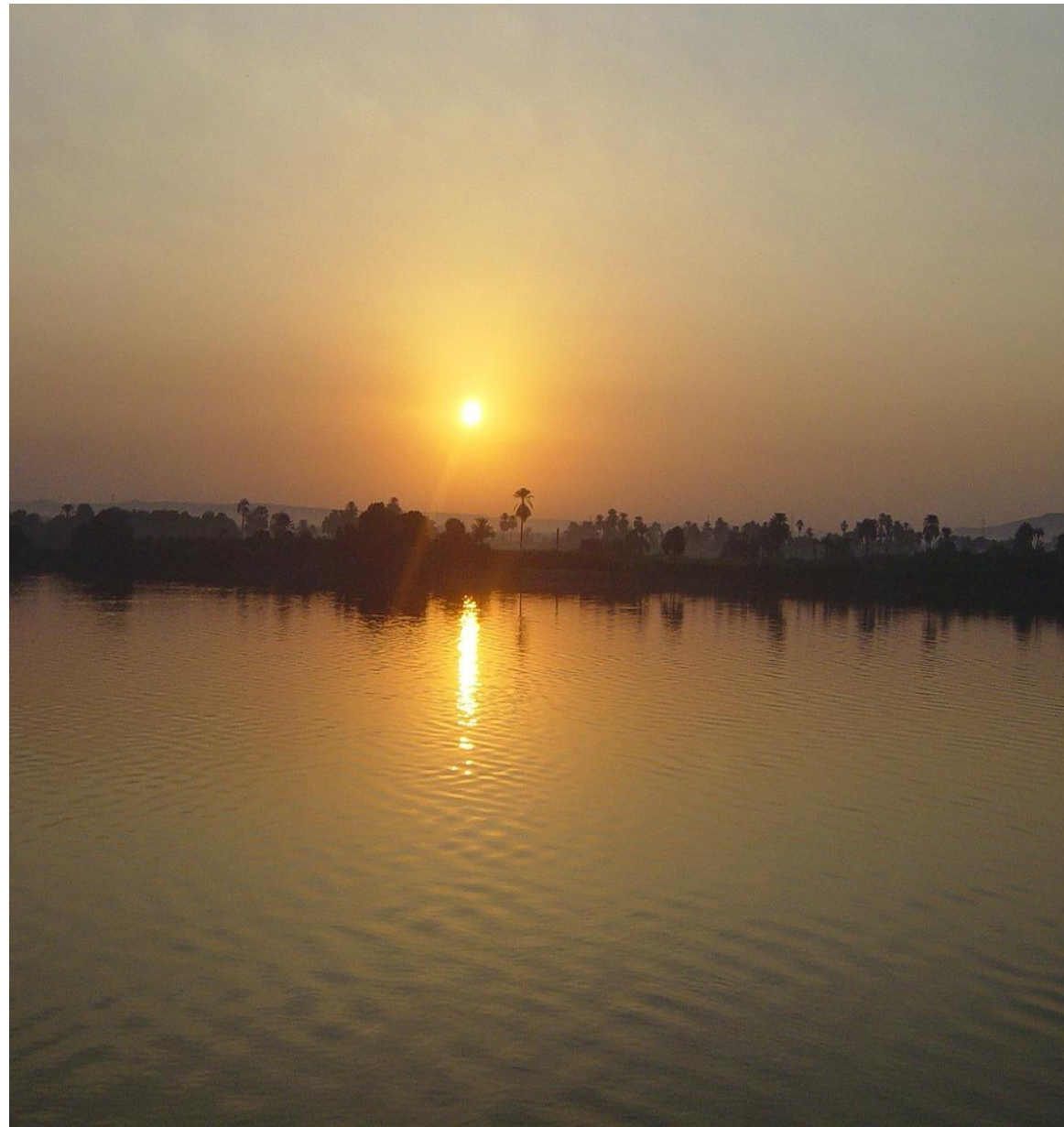
A. Fake the Facts: Two Truths and Lie

Students working in five groups of 3-4 each. Students will work individually at first (10 min) , and then in pairs (10 min)

20 Minutes

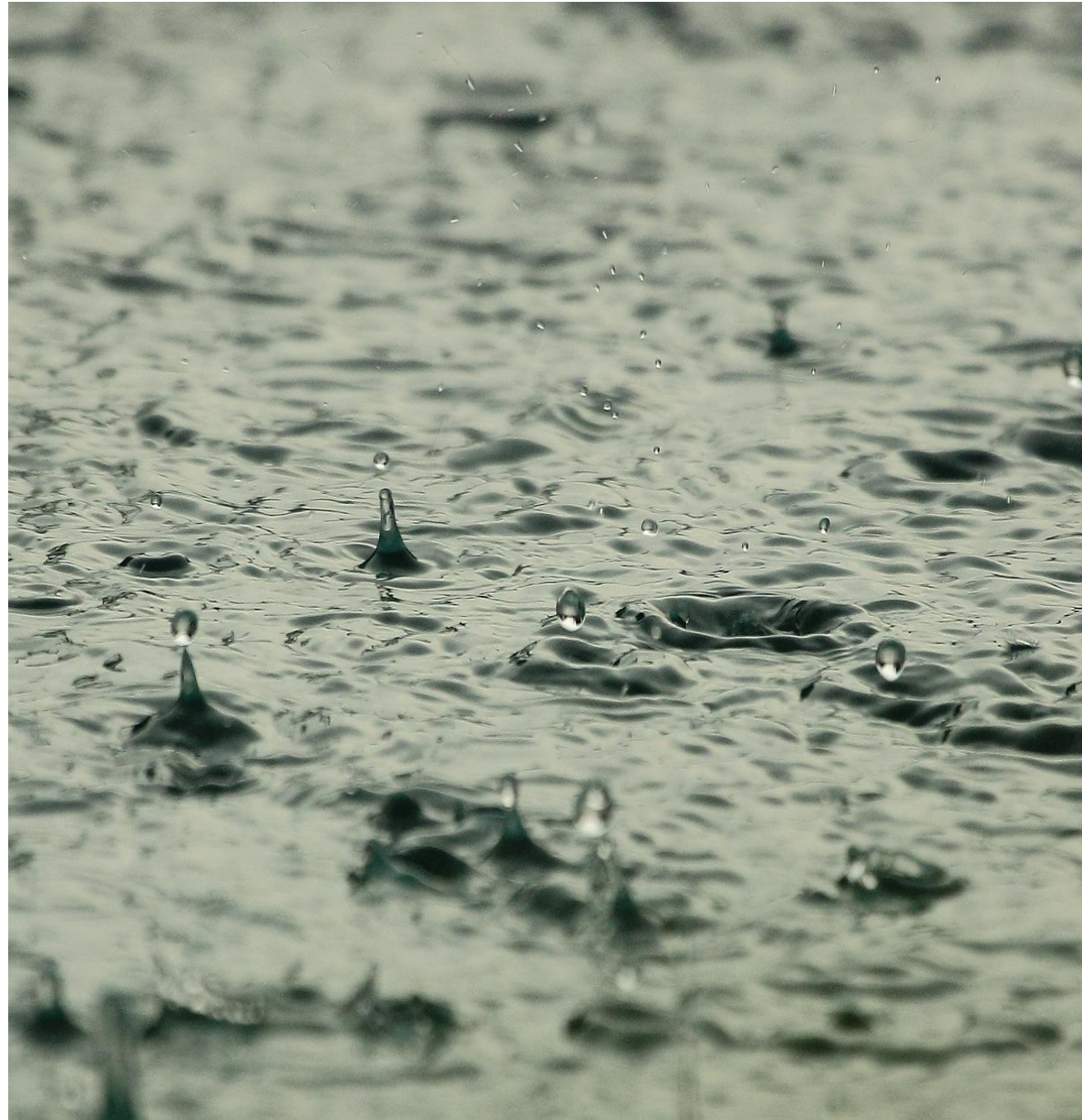


**B.INTRODUCING
SOCIO_CUKTURAL
SNAPSHOTS (25-30 min)**
Video Viewing with notes



B.DISCUSSION

- Can you make any links between the previous videos?
- How are science and scientific thinking important in tackling this issue? Elaborate.
- How can the arts/culture play a role in addressing this crisis?



C. DISCUSSION

10 minutes

SOCIAL
BIOPHYSICAL

Stakeholders

Connections

Feedback Loops

D. Your Assignment for Class 3 Number of the Day

Insert due date here:

- A. This assignment aims at making students actively involved in communicating and raising awareness of the Nile crisis to the public, by producing a coherent and easily transmitted media message.
- B. This message can be in the form of a '*Number of the Day*' activity, wherein the students present a number/statistic they have obtained from the data examined, and present it in a single sentence or two in an appealing and creative way.

120 Million

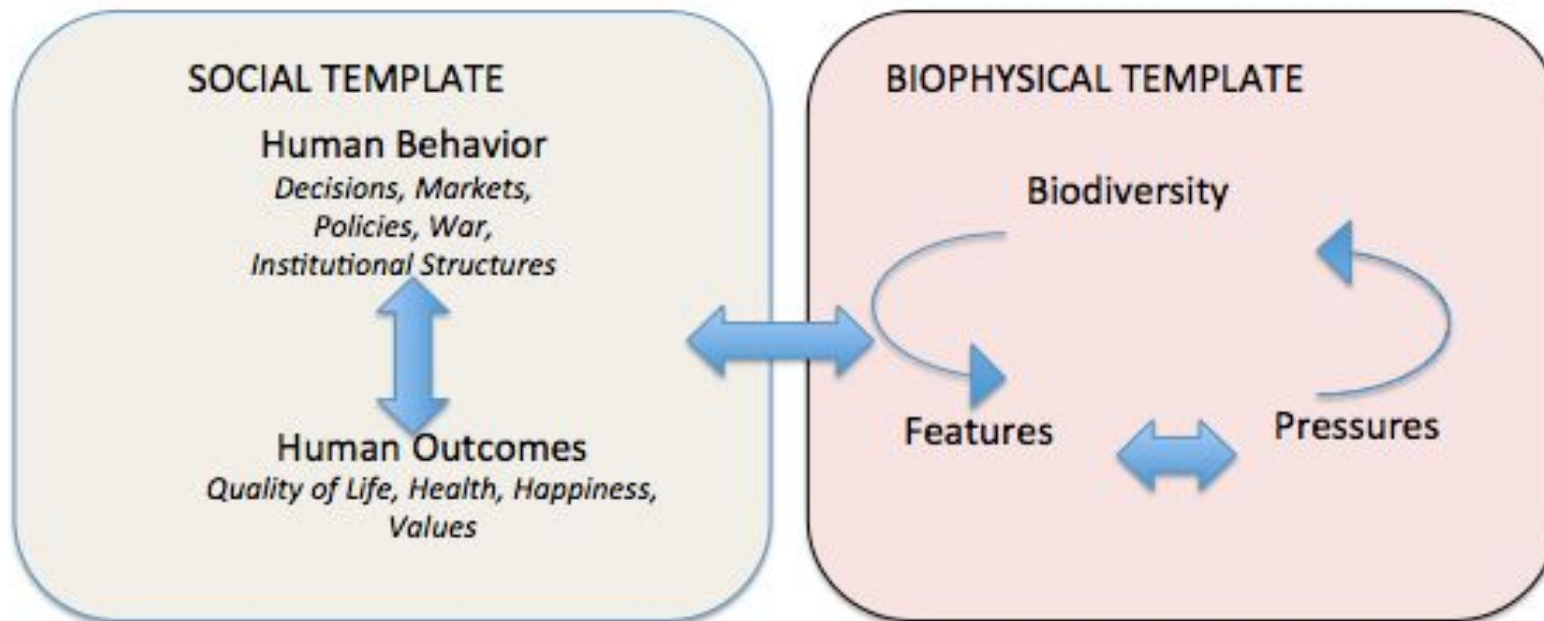
The amount of rain that fell on the Red Sea Governorates over the past few days was around 120 million cubic meters, which is enough to cover the needs of 120,000 Egyptians if it is stored appropriately



Published by: Baseera, 2016

Sources:

- 1.
- 2.
- 3.
- 4.



Synthesize data, ideas, theories to understand coupled social and biophysical systems; feedbacks and nonlinear interactions common; emergent properties and surprises common.

Adapted from: Case-Studies Short Course 2016 Introduction to Synthesis and Socio-Environmental Synthesis

David Hawthorne & Margaret Palmer

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<https://pixabay.com/en/river-nile-egypt-sailboat-dhow-378495/>

<https://pixabay.com/en/water-priroda-drops-rain-815271/>

<https://pixabay.com/en/movie-reel-projector-film-cinema-918655/>



Class 3-4: FiNILE Solutions

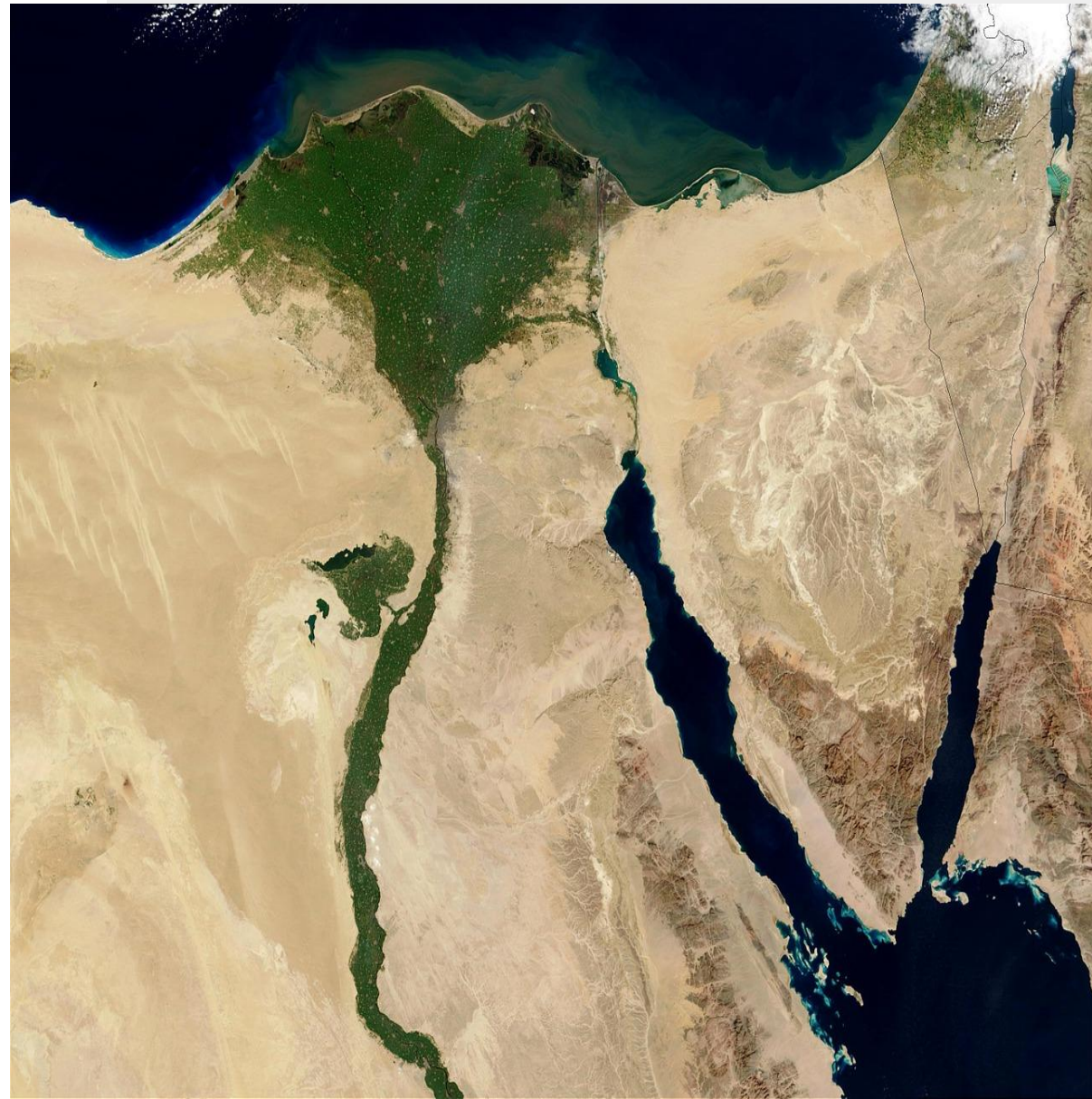
Egypt's FiNile Solution: A Case Study

Authors: Hoda Mostafa, Mahmoud Shaltout, Sherif Osman and Tamer Shoeib



DUE TODAY

1. **Number of the day activity and accompanying 150-300 word reflection piece.**
2. **A copy of your systems map**



Class aims

Aims of Activity:

1. **Exploring existing solutions** to the Nile crisis.
2. **Critiquing these solutions**, using existing assessment techniques (The 6 Thinking Hats[®]).



INSTRUCTIONS to STUDENTS:

Each group will explore
solutions

Description: *This class is aimed at examining existing solutions to the Nile crisis. The basis of class 3 and 4 is the systems map generated in both class one (the class systems map), and those that students have completed individually and are submitting. In groups, students will use these socio-environmental frameworks to assess and critique a specific Nile crisis solution.*

INSTRUCTIONS to STUDENTS:

Each group will explore solutions

Reuse of Wastewater

Water desalination projects

Increasing Water Delivery and Irrigation Systems (quantity and quality)

Urban Water Sustainability/ Consumer Awareness

Increasing Efficient Stormwater Use

- A. **Intro to Solutions (15-20 minutes):** The students here are introduced briefly to several different solutions to the Nile Water crisis. Also covered should be assessment techniques. For the purposes of this exercise, this assessment technique used will be Edward De Bono's Six Thinking Hats[®] (http://www.debonogroup.com/six_thinking_hats.php) which is used in many disciplines to evaluate decisions regardless of scale.
- a. Guideline to facilitating Six Thinking Hats[®] activity

INSTRUCTIONS to STUDENTS: Each group will explore solutions

B. Group analysis of a single solution (50-60 minutes): Each group of students looks at one (or more) solution(s) and use their understanding of the system to critique the solution in groups. Students will be required to examine various sources relating to the solutions (listed below). They will use internet resources in investigating further. Students will then use the assessment techniques to create a group chart detailing the Six Thinking Hats process on their respective solution, which will be due at the end of class. Students are addressing solutions to the key questions posed in this case study.

INSTRUCTIONS to
STUDENTS:
Each group will explore
solutions

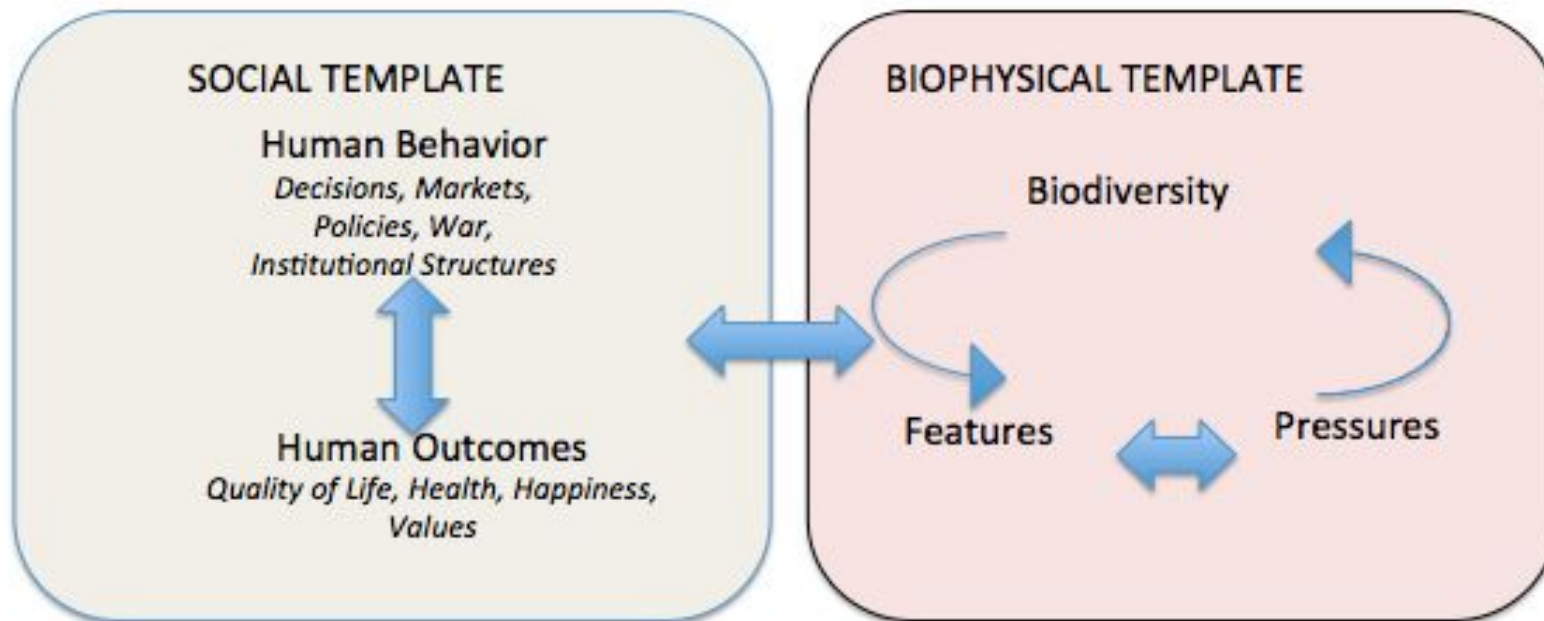
C. Worksheets: Sources for each of the worksheets are included in teaching notes and should be shared online with students for access in class.

Students should be encouraged to explore additional resources prompted by the suggested resources.

SYSTEMS MAPS

10 minutes: Final Wrap-up





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*Adapted from: Case-Studies Short Course 2016 Introduction to Synthesis and Socio-Environmental Synthesis
David Hawthorne & Margaret Palmer*

DISCUSSION

10 minutes

SOCIAL
BIOPHYSICAL

Stakeholders

Connections

Feedback Loops

Your FINAL Assignment

Insert due date here: (4-5 days
recommended)

Submit an individual ***Systems Map*** representing your current understanding of the Nile water situation in Egypt.

Nile Citizen Report

Nile Citizen Report

Students will work on writing a short citizen-science news article communicating a data-backed solution to a selected problem. This should follow the standard word count of any online news article - around 500 to 750 words. This will be due after Class 4.

Students will submit this assignment the following class. Guiding questions to this activity include :

- **What is the problem** that the article/post addresses?
- **Why is this issue important ?**
- **Identify the target audience.** Why this issue is relevant to them?
- **Know your audience.** What background/knowledge do they have about both problems and solutions?
- **How will your article/post help** in both understanding and solving the issue?

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<https://pixabay.com/en/sunset-nile-egypt-river-water-78043/>

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