

## Mars for Earthlings

### LESSON 14: Water World

#### *In-Class Activity 1*

##### *Spits on Mars*

#### **Purpose:**

- Understand the concept of longshore drift and the geomorphic features it creates.
- Search for and identify sand spits/tombolos on Mars

#### **How do sand spits form?**

View the following video of Spit Formation in the UK and consider the following questions (You may need to use some of your knowledge about Earth science in addition to the information in the video to answer the questions):

[http://www.youtube.com/watch?v=Fe9YBuK\\_qEo&feature=endscreen&NR=1](http://www.youtube.com/watch?v=Fe9YBuK_qEo&feature=endscreen&NR=1)

1. Where would the coarsest grain sizes be deposited on a beach?
2. What determines the location of particular grain sizes?
3. What governs the growth of a spit?

#### **Finding sand spits on Mars**

Using a MOLA colorized elevation map, complete the following:

1. Mark or point to areas on Mars where spits could be present.
2. How did you make your choices?
3. If longshore drift was present in your chosen regions, what direction is the longshore drift heading? (Hint: You might want to look for elongate spit development.)







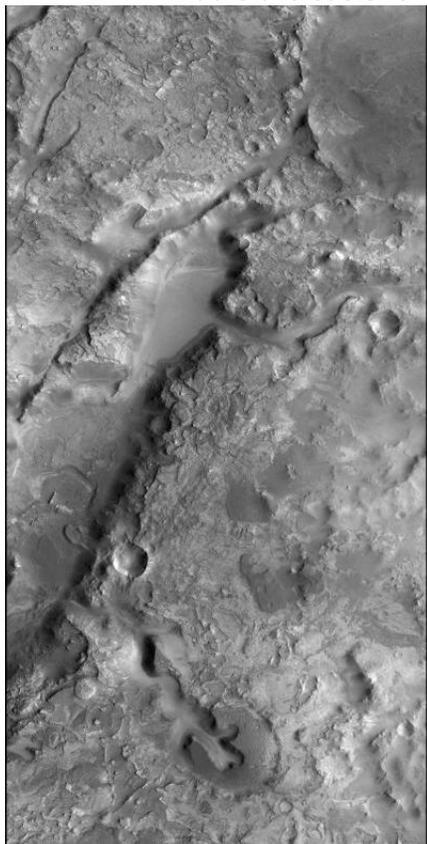
## Mars for Earthlings

### Carbonate rocks on Mars

1. Open up JMARS and view maps of carbonate rocks.
2. Where are the carbonate minerals most common?
3. What would you need to change about Mars today for Mars to be conducive to carbonate development?

### Nili Fossae, Mars

1. Where might you find carbonates in Figure 1? Draw arrows to the region.
2. What is the basis for your decision?



**Figure 1:** Nili Fossae Region Imaged by CTX  
Image Credit: ASU/Malin Space Science Systems

## Mars for Earthlings

### **Homework 1**

Water World\_MFE

*Mars Ocean Press Release*

### **Purpose:**

Critically assess the validity of media-released discoveries of Mars; in this case, a Mars ocean.

### **Directions/Questions:**

Navigate to the following press release by CU-Boulder in June 2010:

<http://www.colorado.edu/news/releases/2010/06/13/new-cu-boulder-study-indicates-ancient-ocean-may-have-covered-one-third>

1. What evidence does the article use to support an ancient Mars ocean?
2. In what geologic age of Mars' history would oceans most likely have existed? (Noachian, Hesperian or Amazonian) \*Note: You may need to do some outside research to answer this question.
3. What evidence would convince you that an ocean existed on Mars that this press release did not address?
4. How would you improve the press release overall?
5. Contrast the Science Daily press-release with CU-Boulder's press release. Do they differ? If so, how? <http://www.sciencedaily.com/releases/2010/06/100613181245.htm>
6. Find a more recent article on the potential Mars Ocean. Summarize the major points. Has scientists' thinking on the topic changed?

**Be prepared to discuss your opinions in class!**

