"My Place on Earth"
AREN, aerial photography, Earth as Art, Frustrationless Flyers
Middle School Students (ages 11-13) at MSU Explore Camp
90 minutes
Format: Guest presenter at a STEM summer camp (Suzi Taylor, Montana State University)

Activity objectives:
By the end of this activity, youth will:

1) Learn what is NASA, how MSU is working with NASA, and what NASA studies
2) Think about why we study the Earth, and what and how we can see Earth from above
3) Consider sense of place – what is special about "their place?"
4) Think about how seeing from above could help solve an environmental problem
5) Know about the NASA Aerokats program; discuss safety, technology and operations
6) Design, build and fly their own Frustrationless Flyer to take home

You'll need:

- Colored index cards for "Place" exercise; pencils
- Projector to show Earth as Art images
- Aerokats equipment for show and tell: Big kite (assembled), roll of string, gloves
- Supplies for each child to make a Frustrationless Flyer
    - Pack of kites, hole punches, extra toothpicks, extra stickers, extra copies of instructions
    - Art supplies – markers, crayons
- Take home item (optional) – Aerokats bookmark, MSU sticker, NASA sticker

Preparation

- Consider where they will stand for the "My Place" self-organizing activity
- Put index cards and pencils at each table
- Have art supplies ready to go
- Unpack FF's and set the string rolls aside
- Build one FF as a model
- Put FF instructions on a slide or make copies as handouts

Group discussion

1:30 – 1:35 Icebreaker questions / Introductions

Tell the kids who you are, where you work and how to address you ("You can call me Miss Suzi"). Tell them where you come from (your place) and that you are proud of them for doing the camp. Ask them what they have been learning about this week.
Showed Google Map satellite image of MSU campus. They had fun finding their dorm, their cafeteria and our classroom.

1:35 – 1:40 My Place self-organizing activity

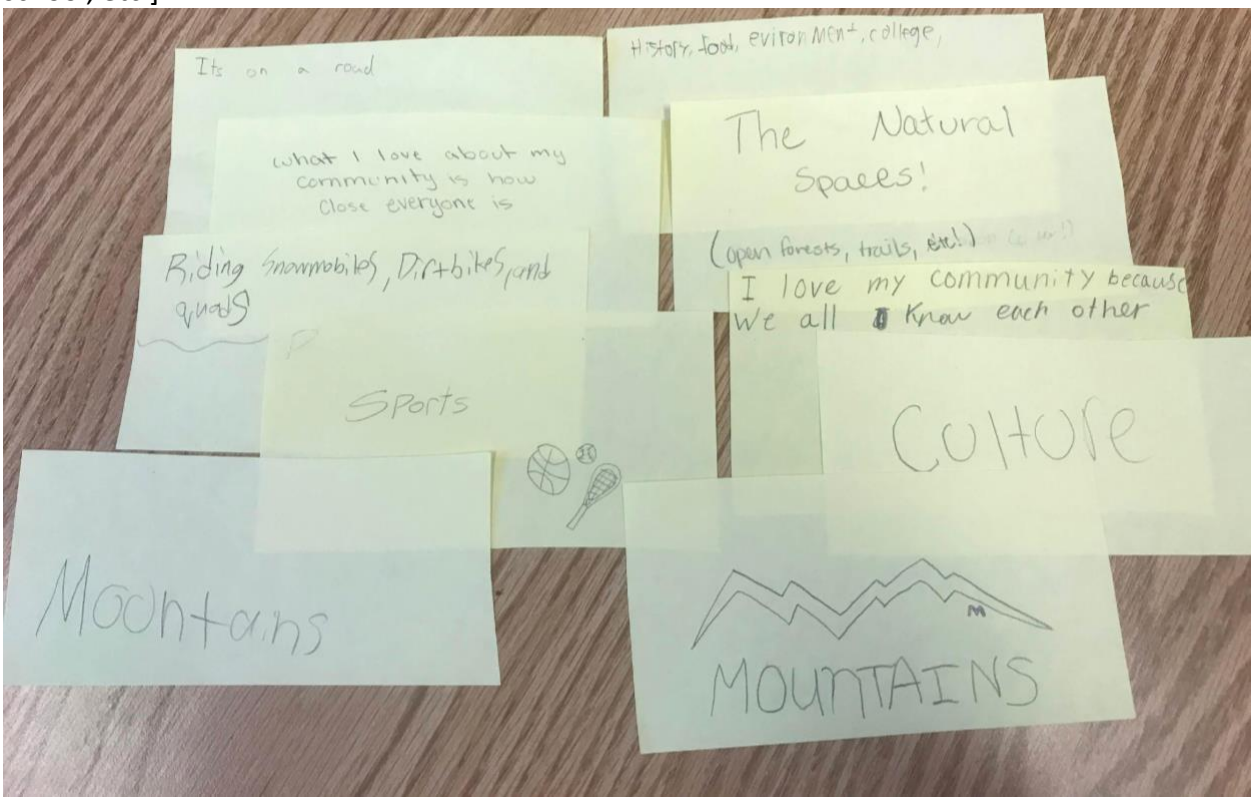
Today we are going to talk about "your place" – the community and place where you come from. To get started, we are going to do a quick stretch and move activity.

My Place – self-organizing exercise.
You are going to arrange yourselves in a line from smallest town to largest – but you have to do it without talking! [When done, you can try to insert yourself into the line based on your hometown – also without talking]

1:40 – 1:50 Questions and discussion. Let them know how excited you are to tell them about a cool project you get to be part of. Let them know they are going to do a project that they will get to take home. But first a few questions:

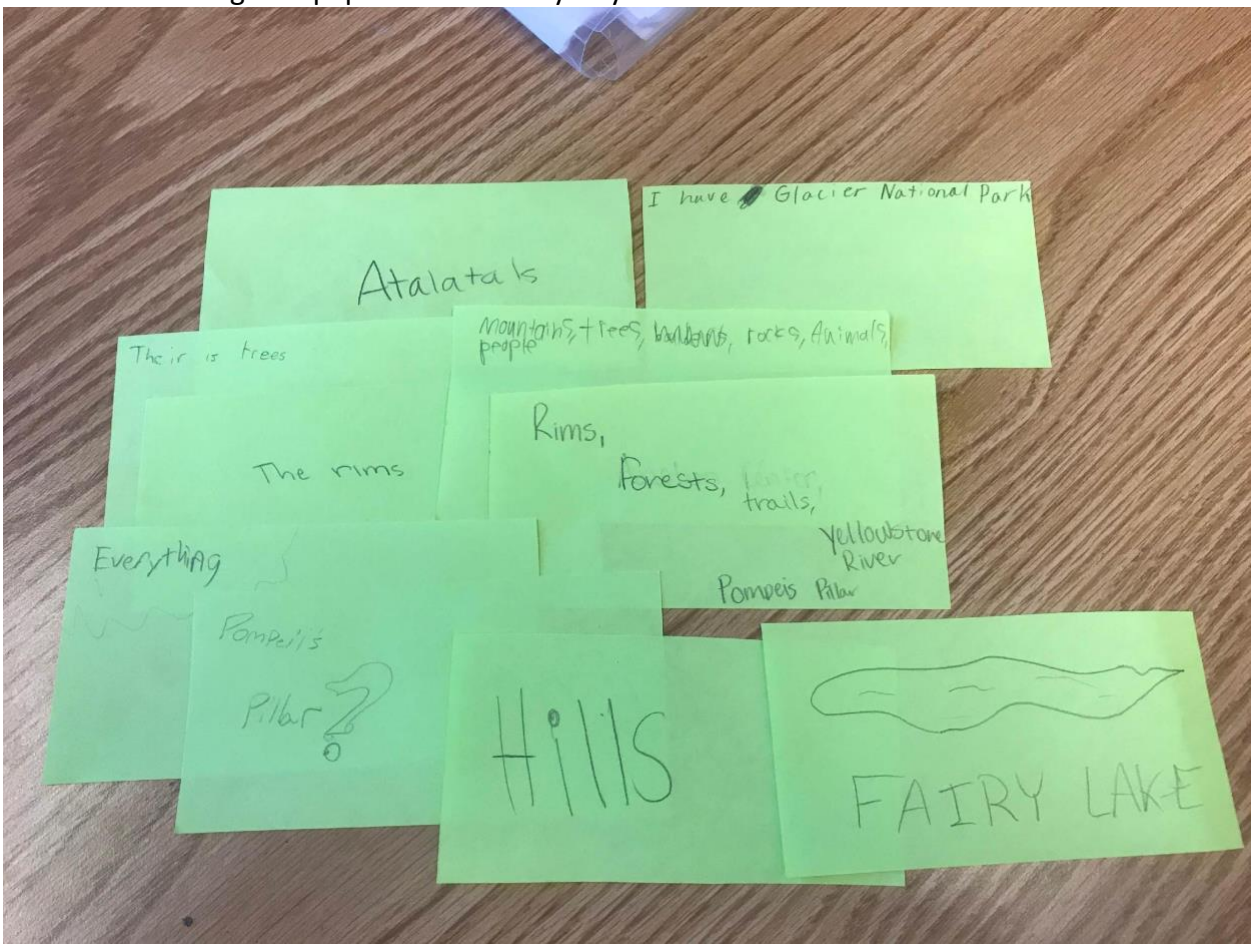
- Who can tell me what NASA is?
- What does NASA study? [Many answers will come up; they may eventually get to "Earth," as Earth is a planet]
- How can we study the Earth?

1:50 – 1:55 Index cards – MY PLACE [need slides with the questions on them] On the yellow paper, I want you to write *something that you love about your community*. If you have lots of ideas, put one on each card. Don't put your name on it [This could be anything – family, sports, school, etc.]



Now I want you to write something that is special about the PLACE where you live – something that is about its location on Planet Earth [Mountains, trees, rivers, parks, etc.]

Write this on the green paper. Use as many as you like.



1:55 – 2:05 Keep these thoughts in mind as I tell you about a NASA project that can help us learn more about our places on Earth, AND help us solve some of the problems that we might encounter

Our project is about seeing the Earth from above. I'm going to show you some images from a project called NASA Earth as Art. [Explain the false color used in the satellite images] Let them guess what they are seeing (I used about 8 images from this book)
NASA Earth as Art https://www.nasa.gov/pdf/703154main_earth_art-ebook.pdf

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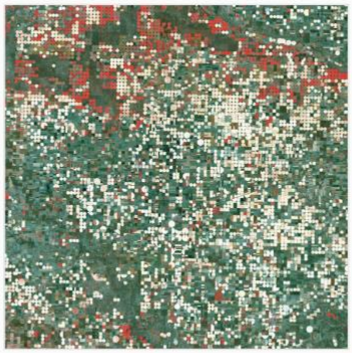

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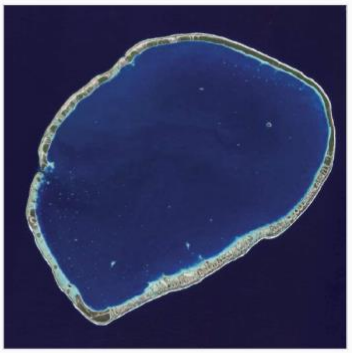

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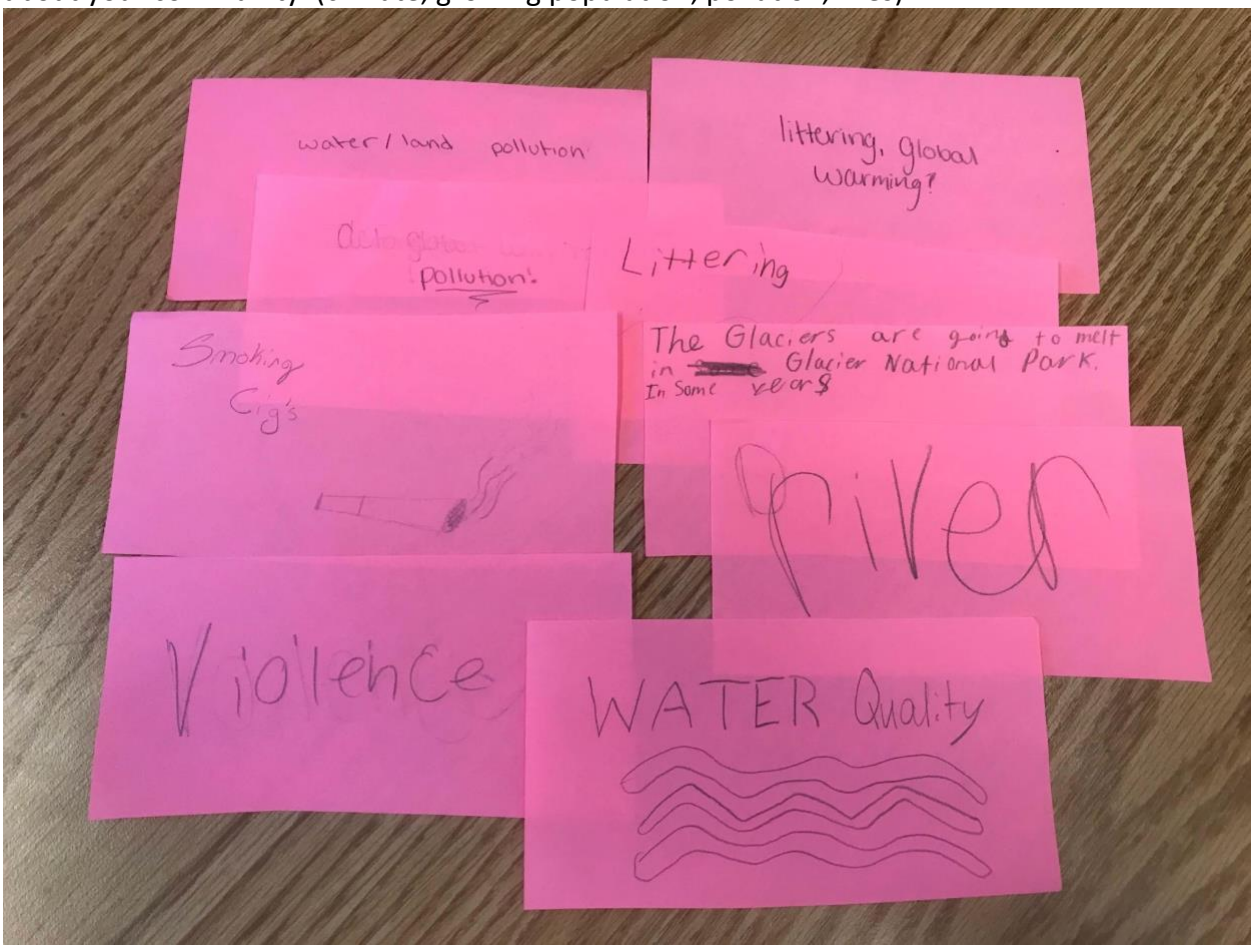
For the last two images (*not the ones above*) I pointed out how the imagery could help us think about an environmental problem (one had phytoplankton, one had a river with lots of sediment)

For our last question before I tell you about the NASA project we are doing at MSU, use the pink piece of paper. I want you to write about an environmental problem or concern you have about your community. (climate, growing population, pollution, fires)



Ask if anyone would like to share what they wrote down

Start transitioning to kites

- What are some other ways we could get pictures of the Earth? (They said space station, rocket, etc.; if necessary, bring them closer in –drone, helicopter, airplane, tall building)

- What would you want to see if you could look from high above?

Tell about some of the things we can figure out when we can see from up above: How many people are at an event like a parade; people picking up trash on the ocean beach can see how far the trash stretches out; we can see where does a stream go. We even have special equipment that can tell us how warm or cold the water in a river is – that is good to know so we can help plants and fish!

2:05 – 2:10 About AREN

AREN equipment

Kite, string, gloves (pass around)

Talk about safety

- What are some things that could go wrong when you are flying a kite?
- What could you do to make sure those things don't happen?

2:10 – 2:30 Make Frustrationless Flyers

- Show the FF put together – demonstrate how the wind would catch it and loft it into the air.
- Point out the parts and how it is assembled
- Pass out art supplies – crayons, markers
- Encourage them to choose an art theme about "their place" – something special about where they live
- Kids will finish at different times. Encourage them to decorate both sides if they finish early.
- Keep the string rolls separate for now.

2:30 Wrap up and any questions

Thank them for coming. Give out NASA stickers, Aerokats bookmarks. Tell them they can finish decorating their kite at home.

If you are at MSU, come and say hi to me! And maybe someday, you will be working at NASA and I will come say hi to you!

2:35 – 2:45 If time, go outside to fly. We didn't attach the long string (just the bridle string). <u>Don't forget a group photo!</u>