

**CLIMATE CHANGE: THE BLOB: GR 6-8 (LESSON 1-3)**

**Elder Quote/Belief:**



*“Remember what seal tastes like,  
because when you reach my age,  
this may no longer be around.”*

*-Nancy Yeaton*

**Grade Level: 6-8**

**Overview:**

The Elders of the Chugach Region have empirical knowledge of changes seen during their time where the availability of food from the sea was plentiful. Elders have stated they have seen the salmon getting smaller with softer flesh and not sure why. According to scientists, these changes could be in direct correlation to the ‘Blob’. The ‘blob’ is a mass of warm water in the Pacific Ocean, up and down Mexico and Alaska waters. This mass is causing algal bloom and reducing phytoplankton, which seem to have a direct impact on our traditional food sources such as sea lion and salmon. Those dependent on phytoplankton are moving up north due to cooler waters. The reduction of the food source has impacted the diet of salmon, water fowl and the mammals of the ocean. Presently, the Elders have expressed their concerns as they watch with trepidation the changes of our traditional food source diminishing and question what will continue to be available.

**Standards:**

<i>AK Cultural:</i>	<i>AK Content Science:</i>	<i>CRCC:</i>
<b>B(2)</b> - develop an understanding that culture, local knowledge, history, and interaction with the environment contribute to the development of scientific knowledge, and local applications provide opportunity for understanding scientific concepts and global issues.	<b>A(3)</b> - develop an understanding that culture, local knowledge, history, and interaction with the environment contribute to the development of scientific knowledge, and local applications provide opportunity for understanding scientific concepts and global issues.	<b>C(2)</b> Students should know about the history of natural and manmade disasters and the impact on the Chugach region

**Lesson Goal:** To learn about ‘The Blob’ and its impacts to our subsistence way of life. Examine ways we, personally and as a community, can do to stop it from growing.

**Lesson Objective(s):**

- Learn and apply the Sugt’stun dialect of vocabulary words
- Research about ‘The Blob’
- Interview Elders about any changes they have seen on our resources that could be a result of ‘The Blob’.

- Make a poster with gained information and impacts of ‘The Blob’ with emphasis on Elder’s TEK.
- Submit the poster at a local science conference
- Make an electronic presentation to share with class/school/community.

**Vocabulary Words:** Sugt’stun Dialects

English:	Prince William Sound:	Lower Cook Inlet:	Eyak:
Ocean	Imaq	Imaq	lahdz (water)
Warm Ocean Water		Imam mera maqaruartuq	
Salmon	Iqalluk	Iqalluk (can mean fish in general)	Te’ya’ (fish)
Rare		Nurnarluni	
Bloom		Itemluni	
Toxic (Poison)		Yaataq	

**Materials/Resources Needed:**

- Elder/Recognized Expert
- Butcher paper on a wall, or on the smartboard in the classroom and title it ‘The Blob’
- Sticky notes
- Construction paper (white)
- Pencils
- Markers/crayons
- Glue
- Magazines/uploaded images from suggested sites
- Poster paper
- Camera/iPad/electronic device of your choice

**Websites:**

- <http://www.eyakpeople.com/dictionary>
- ‘The Blob’
  - <https://weather.com/science/weather-explainers/news/weird-weather-warm-blob>
  - [https://wikivisually.com/wiki/The\\_Blob\\_%28Pacific\\_Ocean%29](https://wikivisually.com/wiki/The_Blob_%28Pacific_Ocean%29)
- This new film explores “The Blob,” a warm water anomaly that started in the Gulf of Alaska and later spread up and down the coast of western North America
  - <http://pwssc.org/the-blob-with-dr-rob/>
  - [https://www.youtube.com/watch?v=DmxAm\\_oOeY](https://www.youtube.com/watch?v=DmxAm_oOeY)
- The Pacific blob caused an ‘unprecedented’ toxic algal bloom — and there’s more to come

- [https://www.washingtonpost.com/news/energy-environment/wp/2016/09/29/warm-oceans-caused-last-years-toxic-blob-and-more-algae-blooms-may-be-in-store/?utm\\_term=.4d4b4fb72387](https://www.washingtonpost.com/news/energy-environment/wp/2016/09/29/warm-oceans-caused-last-years-toxic-blob-and-more-algae-blooms-may-be-in-store/?utm_term=.4d4b4fb72387)
  - The effects of the blob in Alaska
    - <https://frontierscientists.com/2018/03/blob-affects-alaska-fin-whales-marine-life/>
  - Sea surface temperatures and anomalies
    - <https://frontierscientists.com/wp-content/uploads/2018/03/SeaSTemp14.15.16.jpg>
  - The effects of juvenile Coho salmon
    - <https://frontierscientists.com/wp-content/uploads/2018/03/CUCoho.jpg>
- Science Conferences to submit posters
- <https://www.alaskamarinescience.org/>
  - <https://kbayscience.org/presentations.html>

### **Teacher Preparation:**

- Contact local Elder/Recognized Expert (someone who knows about ‘The Blob’), to come into classroom
- Review suggested sites, share what you think is applicable to the class
- After viewing suggested sites, create your own poster about the ‘The Blob,’ to share with the class. Display poster in the classroom.
- Share the information about ‘The Blob,’ with the websites appropriate for your class.

#### Questions;

- What is ‘The Blob?’
- How long has it been there?
- How big is this?
- Who discovered it?
- Where is ‘The Blob’ located?
- Describe how ‘The Blob’ has impacted the ocean and give examples.
- What has made ‘The Blob,’ toxic?
- Do you think you can come up with a plan to resolve this problem? If so how?
- What can we individually do to keep ‘The Blob’ from growing?
- How do you think the resources like salmon are affected by ‘The Blob’?

**Opening:** Have any of you heard about ‘The Blob’? If so, what do you know about ‘The Blob’? The ‘Blob,’ in the Northwest Pacific is causing havoc in the ocean, warming up the waters impacting the fish, mammals, water fowl and the weather. How do you think it is impacting the resources? Have you heard Elders talking about the impact on resources? If so, what types of impacts? Let’s delve more into what ‘The Blob’ is all about.

### **Activities:**

#### **Class I:**

1. Open site onto the whiteboard; <https://frontierscientists.com/wp-content/uploads/2018/03/SeaSTemp14.15.16.jpg> , have this showing without any mention of it until after the guest has shared and students have asked questions.
2. Go over Sugt’stun/Eyak vocabulary words and inform students they will need to apply as many of these words when creating their poster and digital presentation.

3. Take photos while throughout activities
4. Introduce invited guest to the class
5. View YouTube; [https://www.youtube.com/watch?v=DmxAm\\_oOeY](https://www.youtube.com/watch?v=DmxAm_oOeY)
  - a. Published on Feb 1, 2016
  - b. A short piece on the Pacific "Blob" what it is and how it affects the weather of Alaska and much of the west coast of the Lower 48.
6. Question students about what they learned from the guest and the YouTube clip, document responses.
7. Ask students to ask parents/family members/community members, if they have heard of 'The Blob,' and to document the responses so they can use this information later with their electronic presentation

### **Class II:**

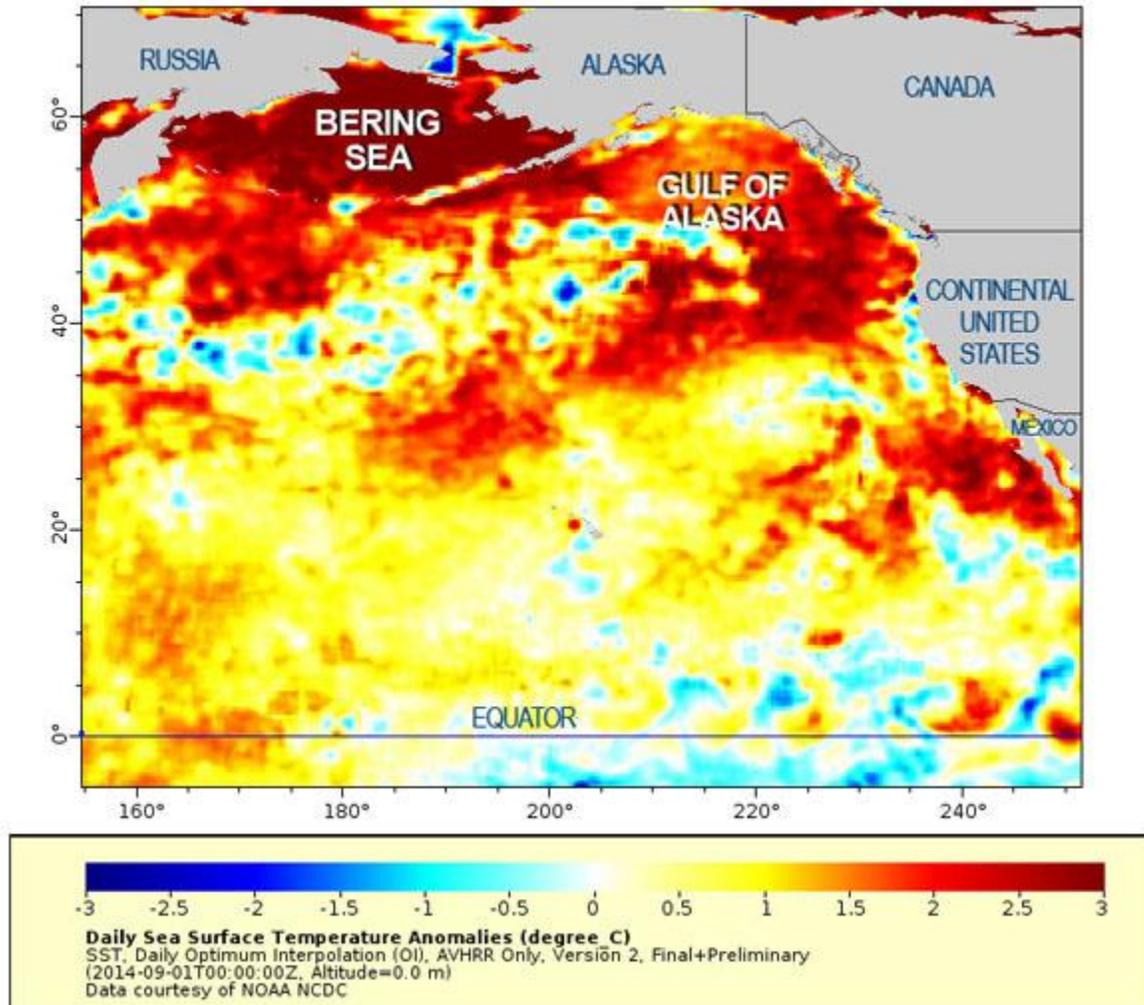
1. Review how to create a science poster:
  - a. Can find at the 'Science Poster Prompt' on the Chugachmiut Cultural Heritage Preservation webpage lesson prompts
2. Take photos while students are working
3. Have students create their posters by starting out with construction paper/butcher paper.
4. Remind students to apply the Sugt'stun vocabulary when creating their posters.
5. Students can upload images from suggested sites to use for their posters.
6. Give students ample time to research about the 'The Blob.'
7. Inform students to take notes as they research
8. Have students write on sticky notes, any information students found interesting and place sticky notes on butcher paper.
9. After students have created their poster, give them poster board to transfer what they already created on construction paper.
10. Have students place posters on the walls throughout the class or hallway
11. Encourage students to contact local groups or contact the following to submit the posters;
   
<https://www.alaskamarinescience.org/>
  
<https://kbayscience.org/presentations.html>

### **Class III: 'The Blob' Research and Presentation**

1. Websites for students research;
  - a. [https://wikivisually.com/wiki/The\\_Blob\\_%28Pacific\\_Ocean%29](https://wikivisually.com/wiki/The_Blob_%28Pacific_Ocean%29) ,
   
<http://pwssc.org/the-blob-with-dr-rob/> ,
   
<https://weather.com/science/weather-explainers/news/weird-weather-warm-blob>
  
<https://frontierscientists.com/2018/03/blob-affects-alaska-fin-whales-marine-life/>
  
<https://frontierscientists.com/wp-content/uploads/2018/03/SeaSTemp14.15.16.jpg>
  
<https://frontierscientists.com/wp-content/uploads/2018/03/CUCoho.jpg>
2. Have students read; [https://wikivisually.com/wiki/The\\_Blob\\_%28Pacific\\_Ocean%29](https://wikivisually.com/wiki/The_Blob_%28Pacific_Ocean%29)
3. Inform students they will research to create an electronic presentation about 'The Blob,' and to utilize all the notes they have been taking.
4. Share photos with students to use in their presentations.
5. Have students share presentations in class.

**Assessment:**

- Students created an informational poster of ‘The Blob’ intertwined with Elder TEK and Sugt’stun/Eyak vocabulary words
- Student submitted the poster to an upcoming Science conference
- Student created an electronic presentation of ‘The Blob,’ with required elements and presented to the class/school/community.



Unusually warm temperatures dominate three areas of the North Pacific: the Bering Sea, Gulf of Alaska and an area off Southern California. The darker the red, the further above average the sea surface temperature. NOAA researchers are tracking the temperatures and their implications for marine life.