



Oregon

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June 13, 2024

To: Land Conservation and Development Commission

From: Brenda Ortigoza Bateman, Ph.D., Director
Lisa Phipps, Ocean and Coastal Services Division/OCMP Manager
Carl Hendrickson, Sea Level Rise Adaptation Fellow
Sean Carpenter, Senior Editor

Subject: **Agenda Item 8, June 27-28, 2024, LCDC Meeting**

Sea Level Rise Adaptation in Clatsop County

I. Agenda Item Summary

During the past two years, The Oregon Coastal Management Program (OCMP) secured a Coastal Management Fellow — Carl Hendrickson — from the National Oceanic and Atmospheric Administration (NOAA) fellowship program to address sea level rise impacts in Clatsop County. Sea level rise is affecting existing erosion and flooding trends in coastal regions and will accelerate in the future. This will put pressure on already stressed ecosystems and freshwater resources, contributing to coastal squeeze that will fundamentally alter coastal communities.

This fellowship utilized a range of community engagement methods to assess risks from sea level rise, prioritize important community assets, and pursue adaptation options — all with the goal of helping Oregon's coastal communities plan and prepare for the inevitable effects of sea level rise and coastal squeeze.

a. Purpose

Land Conservation and Development Commission (LCDC) members will be briefed on the fellowship project process and outcomes. This includes:

- Findings from workshops and community engagement sessions in Clatsop County.
- Products, tools, and grants produced during the fellowship project.
- Prioritized adaptation projects for communities to pursue, based on engagement.
- A community engagement guide.

b. Objective

The commission will be informed of the project process, community engagement efforts, recommendations, and products. Staff welcomes guidance from commissioners on how best to share the results of this project so that other jurisdictions may follow suit.

For further information about this report, please contact Carl Hendrickson, Sea Level Rise Adaptation Fellow, at 971-301-1849 or carl.hendrickson@dlcd.oregon.gov.

II. Background

While Oregon is increasingly prioritizing climate change mitigation and adaptation, the OCMP and its network of coastal communities need support to complete climate change adaptation planning as there has not been a full-time position dedicated to this effort. To provide additional capacity, DLCD's OCMP brought on a NOAA Coastal Management Fellow from August 2022 to August 2024.

The fellowship partners with Clatsop County as a case study and model, as it is the county most at risk from sea level rise. The project designed a series of workshops for community members, schools, and local organizations to present sea level rise information and ask for community input on what areas and infrastructure should be prioritized. Community assets and adaptation and resilience actions using concepts from the [DLCD Sea Level Rise Planning Guide](#). These actions include grant funding, connections with academic researchers, support for local organizations, continued outreach, and education events.

a. Workshops and Community Engagement

Staff held community workshops in three unincorporated communities: Arch Cape, Lewis and Clark, and Brownsmead — and additionally the cities of Cannon Beach and Seaside — for a total of five workshops. These communities have experienced impacts from sea level rise and cover a diverse geographic area. Seaside was identified — after consulting with community partner Consejo Hispano — as an ideal location for a workshop focusing on the Latinx community.

The fellow worked with Portland State University to hire facilitators to design the workshops, focused on showing community members maps of sea level rise impacts and recording the responses. Below are summaries of the workshops.

1. **Seaside (Latinx Community):** No Latinx community attendance was noted, likely due to community trust issues relating to government processes, and favorable weather during the event. Five community members — including two

county commissioners — attended and discussed transportation, homelessness, and tsunami preparation. See additional community engagement below.

2. **Arch Cape:** Eleven attendees focused on Highway 101 transportation, shoreline erosion at beach access points, and utilities.
3. **Cannon Beach:** Thirty-three attendees discussed Highway 101 transportation, shoreline erosion, and new community building projects.
4. **Lewis and Clark:** Seven attendees focused on transportation (Highways 101 and 202), utilities, and flood preparedness.
5. **Brownsmead:** Thirty-five attendees focused on dikes, levees, and other flood control structures. The event was scheduled before a diking district meeting to boost attendance.

b. Community Engagement at Schools

1. **Clatsop Community College:** Sixty-four students participated in four sessions.
2. **Astoria High School:** One hundred and six students from freshman science and upperclassmen fisheries science classes participated.
3. **Warrenton High School:** Thirty-eight upperclassmen from the fisheries program participated.
4. **Knappa High School:** Sixty-five students from various grade levels participated.
5. **Seaside High School:** Twenty-five sophomore science students participated.

c. Community Engagement at Events

1. **Seaside Latinx Heritage Festival:** Partnered with Consejo Hispano and Oregon State University to set up a Spanish-focused informational table on sea level rise.
2. **Clatsop County Emergency Preparedness Fair:** Shared sea level rise information with community members.
3. **Hatfield Marine Science Center:** Presented on the sea level rise project as part of a lecture series.
4. **Cannon Beach:** Spoke at a new Surfrider chapter event.
5. **Astoria:** Presented at the Nature Matters event organized by the Lewis and Clark National Historic Park.
6. **Seaside:** Presented at the Watershed Wonder talk series

III. Products and Tools

The fellow produced multiple products and hand-outs for communities, including:

- a. A one-pager follow-up document for workshop participants.
- b. Inundation mitigation and adaptation action plans (IMAAPs) for each community workshop. These documents identify some of the highest priority actions to address sea level rise for each community based on feedback from the workshops.
- c. A draft community engagement guide to support other jurisdictions in assessing sea level rise impacts (*Attachment A*).

- d. A sea level rise and king tides brochure (*Attachment B*).

IV. Grants

The Fellow facilitated the preparation and submittal of three grant applications.

- a. **NOAA Climate Resilience Regional Challenge, Track 1:** Addresses flooding and sea level rise along the lower Columbia River, partnering with State of Washington agencies and community groups. NOAA anticipates informing grantees in summer 2024.
- b. **Oregon Department of Human Services (ODHS) Resilience Hubs and Networks Grant:** Supports the Lewis and Clark Fire Station with upgrades and resources to relocate from hazard zones. ODHS anticipates announcing awards by July 2024.
- c. **Coastal Quest Nature-based Solutions Small Grants Program:** Plans nature-based solutions to climate change, with the focus on reducing flood pressure for Brownsmead. Coastal Quest anticipates announcing awards between June 2024 and February 2025.

V. Conclusion

Sea level rise impacts coastal Oregon, requiring proactive adaptation projects. Early community engagement ensures preservation of coastal communities and the values they hold dear. The commission's feedback on the community engagement guide and related tools are welcome.

VI. Attachments

- A. Sea Level Rise Community Engagement Guide (draft version 1.0)
- B. Sea Level Rise and King Tides brochure (draft version 1.0 - also available in print)

SEA LEVEL RISE COMMUNITY ENGAGEMENT GUIDE

June 13, 2024



Sea level rise workshop in local grange hall

This Guide is intended to help jurisdictions navigate the community engagement process that should accompany a sea level rise vulnerability assessment. It is meant to offer background on the importance of community engagement and provide a framework for carrying it out. Each coastal community in Oregon is unique; the community engagement process should reflect that uniqueness.



OREGON
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OCMP
Oregon Coastal
Management Program

Prepared by NOAA Coastal Management Fellow (2022 - 2024)

What is sea level rise and how is it impacting the Oregon Coast?

Sea level rise is caused by numerous factors affecting the volume, or amount, of water in the ocean; the majority of these factors are linked to global climate change. The two major causes of global sea level rise are thermal expansion caused by warming of the ocean (since water expands as it warms) and increased melting of land-based ice, such as glaciers and ice sheets. Climate change and rising sea levels impact Oregon's coast in a variety of ways including increased storm surge intensity, higher tide levels, and reduced riverine drainage during precipitation events. These impacts are occurring at different rates in different regions of the state. In some places, increasing coastal erosion and storm impacts are linked to rising seas. In others, high tides during high river levels contribute to significant riverine flooding. The timeline and impact of sea level rise will be specific to each location and community being considered.

What information and tools are available?

There are a wide variety of sea level rise visualizers available online to help understand and prepare for sea level rise. The National Oceanic and Atmospheric Administration (NOAA) provides [fact sheets](#) to give a basic understanding of sea level rise science, and [viewers](#) to see what future sea level rise might look like in different places. Numerous other reliable sources are available online – the important thing to remember is that preparing for sea level rise is a locally specific issue requiring the use of the best available data for your region.

DLCD has released an Oregon specific sea level rise toolkit to help visualize and understand impacted community assets, prioritize community assets and actions, and give recommendations to carry out adaptation projects, available at the [Oregon Coastal Atlas](#) and detailed below.

Sea Level Rise Adaptation Planning Toolkit



Figure 1 - SLR Adaptation Planning Toolkit – Oregon Coastal Atlas

1. *Sea Level Rise Impact Explorer*: This interactive map is a combination of multiple data sources and is meant to serve as a planning tool. The dataset is not regulatory unless a jurisdiction adopts it. A mix of datasets are displayed and are meant to approximate the areas that will be impacted by sea level rise, using the current best available data.

2. *Sea Level Rise Impact Assessment Tool*: This fillable form is a set of spreadsheets designed to help inventory what assets and activities occur within affected areas, assess vulnerability to harm, and prioritize adaptive actions. This process can serve as the jurisdiction's or organization's vulnerability assessment.

3. *Sea Level Rise Planning Guide for Coastal Oregon*: This document provides a suggested approach to evaluate risks from sea level rise and offers potential adaptation strategies to adapt to impacts. It is intended to guide local planning and development decisions to support community resilience and ensure effective coastal management actions.

Toolkit is available online at www.coastalatlus.net/sealevelrise

How can we engage with the community about sea level rise?

What is community engagement?

Community engagement is the process of **exchanging ideas, knowledge, and experience** with community members regarding a project or initiative that impacts said community. Community engagement should be seen not as one directional but rather as actively listening to concerns, involving community members, and building ownership of the project within the community. Meaningful community engagement requires sustained partnership with communities.

Why does community engagement matter?

It helps **align the project with the needs and vision of the community** and increases the likelihood that project outcomes are widely accepted and successful. It also creates more effective, informed, creative and practical solutions by drawing on local knowledge from diverse groups.

When should we engage?

Jurisdictions should seek to engage with the public **early and often** in the adaptation process. By involving the public early in the process, you allow their views and opinions to help shape the outcomes, giving a sense of ownership and garnering support for any mitigation or adaptation projects that result from the engagement process. Regular meetings and updates help build meaningful relationships with members of the community, showing that your agency can be trusted to have their best interests in mind. This involves planning specific events early on to engage with the public and invite input during and following these events to develop a sense of ownership over the adaptation process, as well as regular check-ins for the duration of the project to build trust in the process.

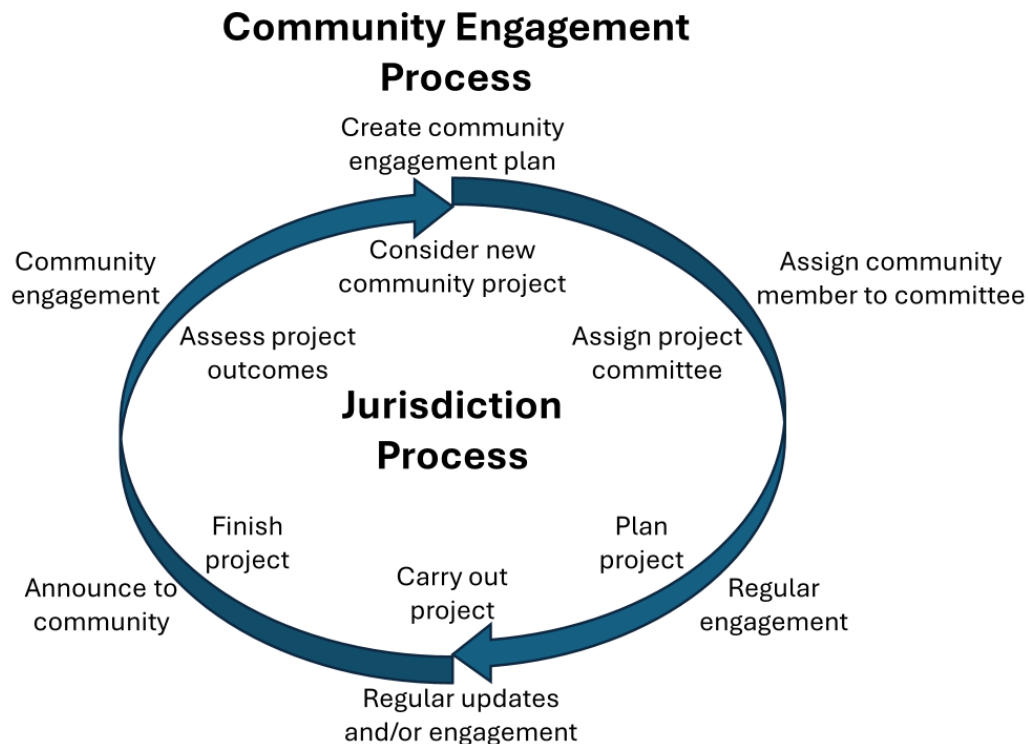
Who should we engage with?

Jurisdictions should aim to engage all members of the community, including people who are only temporarily in the community like seasonal workers, commuters, and tourists. Different groups of people may need to be engaged in different ways, such as students, people who are retired, Latinx community members, etc. Be thoughtful about how “community” is defined and be aware that there are multiple communities in any place and with vested interest in any single issue. For example, a road project might need to engage with adjacent residents, commuters, cyclists, birders, non-English speakers, school kids, tribal members, people with disabilities, and others. **If you ask yourself “should we engage with [a specific community]?”, the answer is most likely yes.**

How should we engage?

The first step in successful community engagement is essential – **listen to and learn from the community**. The initial efforts of community engagement should focus on actively listening and cultivating common understanding of the issue; this will build trust that your agency is there to help the community. Sea level rise is a coastal hazard that has little to no precedent in the modern, western planning processes. However, indigenous peoples in Oregon have experienced sea level rise in Oregon over the last 14,000 years and maintained communities for generations and have invaluable insight that communities should consider incorporating into how adapting to sea level rise is approached. The idea that some places will become inundated so regularly that communities

will need to adapt, or move, can be challenging for people to cope with, particularly when livelihoods and communities are on the line. Leaders engaging with communities about this process should be sensitive to this reality when discussing sea level rise. Change will take time, even if sea level rise is already having an impact, and it will be a different process in every community. While there is likely to be some pushback and even denial during the engagement process, listening, showing empathy, and meeting people where they are both physically and mentally while presenting the facts and pointing out the reality will go a long way in helping communities cope with change.



Consider partnering with local community organizations (advocacy groups, faith-based groups, and culturally specific groups) to lead meetings. If hiring a consultant for community-engagement efforts, consider also hiring someone from the community, such as a local non-profit organization. Explicitly acknowledge the time and effort given by individuals, non-profits, and community-based organizations.

How do we align adaptation with community needs?

Keep in mind that the needs of a community might be larger than or not in direct alignment with your project, and your original project concept might change after working with the community. Some important questions to consider with the community include:

- What are the community's visions for their future?
- What are the community's wants, needs, and priorities?
- What do community members see as the impacts/issues affecting them?

Asking community members to spend their own time attending a project meeting makes it critically important to listen, acknowledge, and try to find ways to incorporate their issues, concerns, and priorities into the project design.

The process of adapting to sea level rise will take time, and the rate of sea level rise and related flooding will change over time and be affected by other hydrological events. Being persistent and keeping the community engaged in the process will help move the needle, even if slowly, in the right direction. In time, the reality of sea level rise flooding will force changes in communities; the more the community has been engaged and trusts in the planning process, the smoother the adaptation process to these changes will be.

How can we increase engagement?

Community engagement sessions should be scheduled far in advance (4+ weeks) and advertised clearly and over multiple forums to reach as many people as possible. This could include radio, print news, social media, public postings in high visibility places (farmers market, library, city hall, etc.), and other locally relevant forums. Consider partnerships with local community organizations that have large and diverse networks to expand your reach. In particular, some organizations are likely to have more resources dedicated to social media, which can greatly increase your reach.

Below are some helpful ways to increase participation during community engagement events:

- Address barriers to access by providing:
 - Transportation options/support to attend meetings
 - Childcare services during meetings
 - Stipends for participation as appropriate
 - Food options (snacks, drinks, meals when appropriate)
 - Multiple meeting times and venues
 - Some community members likely work evenings or weekends and won't be able to attend typical weeknight meetings.
 - Neutral venues, like a public library, may be more inviting to some communities than city hall.
- Address language barriers:
 - Dedicate funds in the project budget for interpretation/translation services, and plan for production of multi-lingual materials (consider asking a local community organization).
 - Use clear language; eliminate acronyms and technical jargon (or define in writing if terms are critical) during meetings.
 - Diversify the project team to represent all members of the community; for example, include bi-lingual speakers.

What are some important public assets within your community? What is something important in your community that could be impacted by sea level rise? (Public assets can be anything – building, park, library, beach access point)

Cannon Beach Fire Station Log in inundation zone	Water source Spring in Ecotrust Reserve affected by rising water table?	Business District 3rd St Humboldt Spruce	Parks Ecotrust Tolovana State	City Parks Les Schwab City Park Ecotrust Reserve
Why is this asset important? (Do you meet friends there, get food, seek exercise services?)	Public safety CPR training	Neat clean cablewater	Health Clinic art galleries restaurants supermarket Serrano Tourism amusement club	Beautiful area - big draw for tourism Concerts in Park Pavilion water, beach meeting place Humboldt
Who uses this asset? (Relatives, families, workers? Is it often crowded?)	Everyone	Everyone	Everyone	Everyone
How important is this to retain in the community? Are there alternatives available?	No (Can get sea side to help, but not along term solutions)	Very important unsubscribing alternatives Vital	Vital NO	Very important NO Very important NO
What makes the community what it is? What are the most important things to protect?	The people of the area - Who live and	Who live and work in Our natural resources provide great barriers visit this area - This is what needs to	Cannon Beach area - the	

Figure 2 - Worksheet from SLR workshop.

How can we educate communities about sea level rise?

It is important to educate both planning staff and community members about sea level rise and the expected impacts in your area. A general understanding of sea level rise is helpful, as is understanding the specific risk in your area. Not all communities will experience the same rates of sea level rise, and storm/tidal/riverine flooding events can interact with sea level rise to create different flood scenarios under different conditions. The makeup of local communities themselves will dictate how and when impacts are felt.

- DLCD offers educational slides with basics on sea level rise, as well as a brochure with information about sea level rise and king tides.
- NOAA provides [fact sheets](#) to give a basic understanding of sea level rise science.
- Jurisdictions can consult with DLCD and DOGAMI to understand their local sea level rise projections.

Additionally, they should review the Sea Level Rise Impact Explorer to

evaluate what community risk in the area is like before showing the maps to the public.



Figure 3 - High school SLR workshop session.

How can we report back to the community and create feedback loops?

It is important to report back to the public what you are hearing from community engagement, how you are using that input in the adaptation process, and when in the process input can be given. Sharing input results back to the community will let people know they are being heard and provide opportunity to make sure their input was properly interpreted. Showing where and how input is being used will build trust in the process. Highlighting opportunities to provide input will encourage more engagement.

Below are some helpful ways to incorporate community input into the planning process:

- Manage expectations by being upfront and honest.
 - o Let participants know upfront of any “non-negotiable” aspects of the project.
 - o Be transparent in describing roles and responsibilities, as well as capacities and limitations (especially any financial constraints and time constraints).
 - o Be accountable and transparent.
- Continue engaging with community throughout project and beyond. Circle back and create pathways for ongoing communication and feedback.
 - o Ensure that promises and commitments made are kept.
 - o Make sure to report project outcomes back to the community.

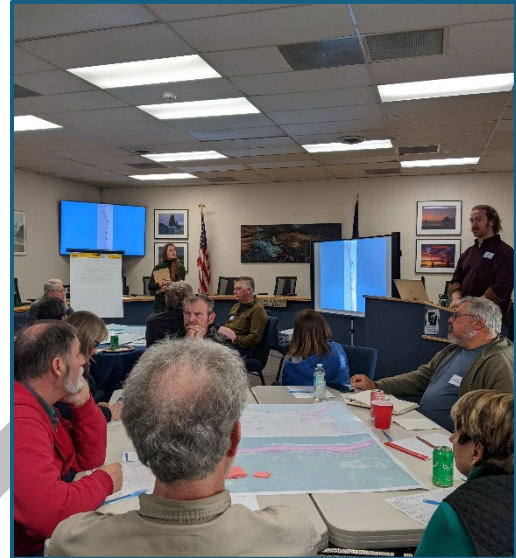


Figure 4 - SLR workshop in city hall.

How can we implement community input into action?

Primary among the methods to build resilience to sea level rise is to secure funding for projects. FEMA serves as a major funding source for resilience projects addressing large flood events. This could focus on issues with dikes and levees as well as large storm events. NOAA offers numerous funding sources and typically focuses on resilience by promoting nature-based solutions. Working with other local partners, agencies, and community organizations is a good way to build strong grant applications. By conducting community engagement around this issue, jurisdictions can greatly improve their standing in grant applications. Once community engagement has identified key issues, conducting a prioritization and feasibility analysis will help narrow the focus of adaptation efforts. As always, it is critical to continue to engage with the community around prioritization processes.

Fiscally compensate any and all time and services rendered, including non-profits or community-based organizations. Do NOT ask or expect anyone to work for free.

Where can we find more information and resources?

www.coastalatlantis.net/sealevelrise

[Oregon Sea Grant outreach and engagement guide](#)

[example workshop worksheet](#)

[SLR slides](#)

HOW CAN YOU PARTICIPATE?

Oregon King Tides Photo Initiative

- The Oregon King Tides initiative asks participants to capture photos of local coastal areas that are subject to flooding or erosion.
- Participants are encouraged to take images where the **impact of the tide can be gauged against familiar landmarks** like buildings, jetties, bridges, roads, sea walls, shorelines, or beach infrastructure. **Before & after pics are great too!**
- Safety measures are highly encouraged!** Take photos from a safe vantage point and don't put yourself in harm's way. Water moves fast, especially waves!

 oregonkingtides.net
 [@oregonkingtide](https://www.instagram.com/oregonkingtide)
 [OregonKingTides PhotoProject](https://www.facebook.com/OregonKingTidesPhotoProject)

Questions? Email:
orkingtide@gmail.com

Join the Oregon
King Tides Project



WHAT IS THE OCMP?

Oregon is one of 34 states to have a nationally recognized Coastal Management Program established by the Coastal Zone Management Act of 1972. The Oregon Coastal Management Program aims to protect coastal and ocean resources, and ensure livable, resilient communities on the Oregon coast. The Oregon Department of Land Conservation and Development is the lead agency in the coastal program network, which also includes 11 state agencies and 42 city and county governments.



WANT TO LEARN MORE?

✉ dlcd.info@dlcd.oregon.gov

🌐 www.oregon.gov/lcd/ocmp

📍 635 Capitol Street NE Suite 150
Salem, OR 97301



AGENDA ITEM 8
JUNE-27-28, 2024-LCDC MEETING
ATTACHMENT B

RIISING TIDES: SEA LEVEL RISE ON THE OREGON COAST



Oregon Coastal Management Program
Department of Land Conservation &
Development

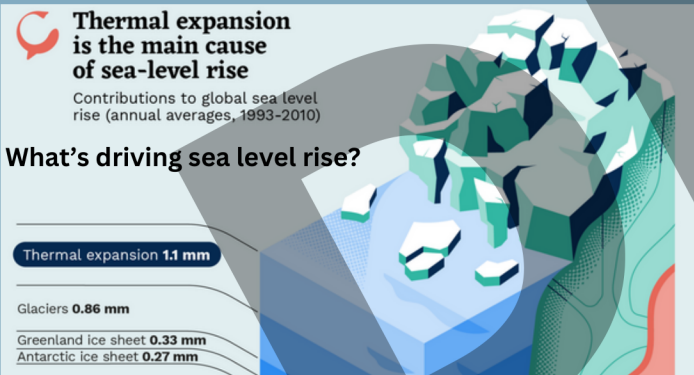
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WHY ARE SEA LEVELS RISING?

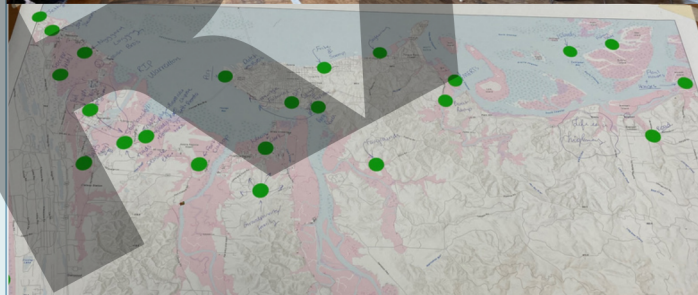
- Thermal expansion of water is the main cause of rising sea levels. CO₂ emissions and rising temperatures are driving this change.
- Glaciers melting on land from rising temperatures also contribute to rising sea levels.



HOW ARE OUR COASTAL COMMUNITIES GETTING INVOLVED?

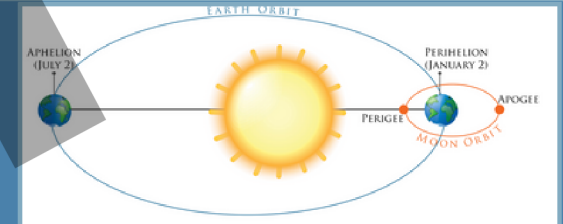
Communities in Clatsop County have been participating in DLCD hosted workshops talking about **local sea level rise impacts**.

These workshops involved **participatory mapping** with coastal communities, local jurisdictions, and high school and community college **students** to find out what is at risk in Clatsop County.



KING TIDES: WHAT ARE THEY?

- When the sun and moon align with the earth, it causes an increased gravitational pull on the earth's oceans. During winter, this pull causes the **highest tides of the year** known as "king tides."
- Use of the term "king tide" originated in Australia, New Zealand and other Pacific nations to refer to an especially high tide that occurs only a few times per year.



WHY DO THEY MATTER?

- King tides can cause **significant flooding and safety issues** along the coast, especially in low-lying areas.
- As sea level continues to rise, the **impacts** of king tides, as well as normal high tides, and storm surges will be **increased**.



- King tides give us a glimpse of what conditions we can expect **more regularly** with sea level rise. Page 13 of 13

WHAT CAN WE EXPECT IN OREGON?

Sea level rise projections for the Oregon coast and the PNW region are around **3 inches - 2.5 feet** in the next 50 years (by 2070). This is **lower** than many places around the US, meaning we have a **chance to plan ahead**.