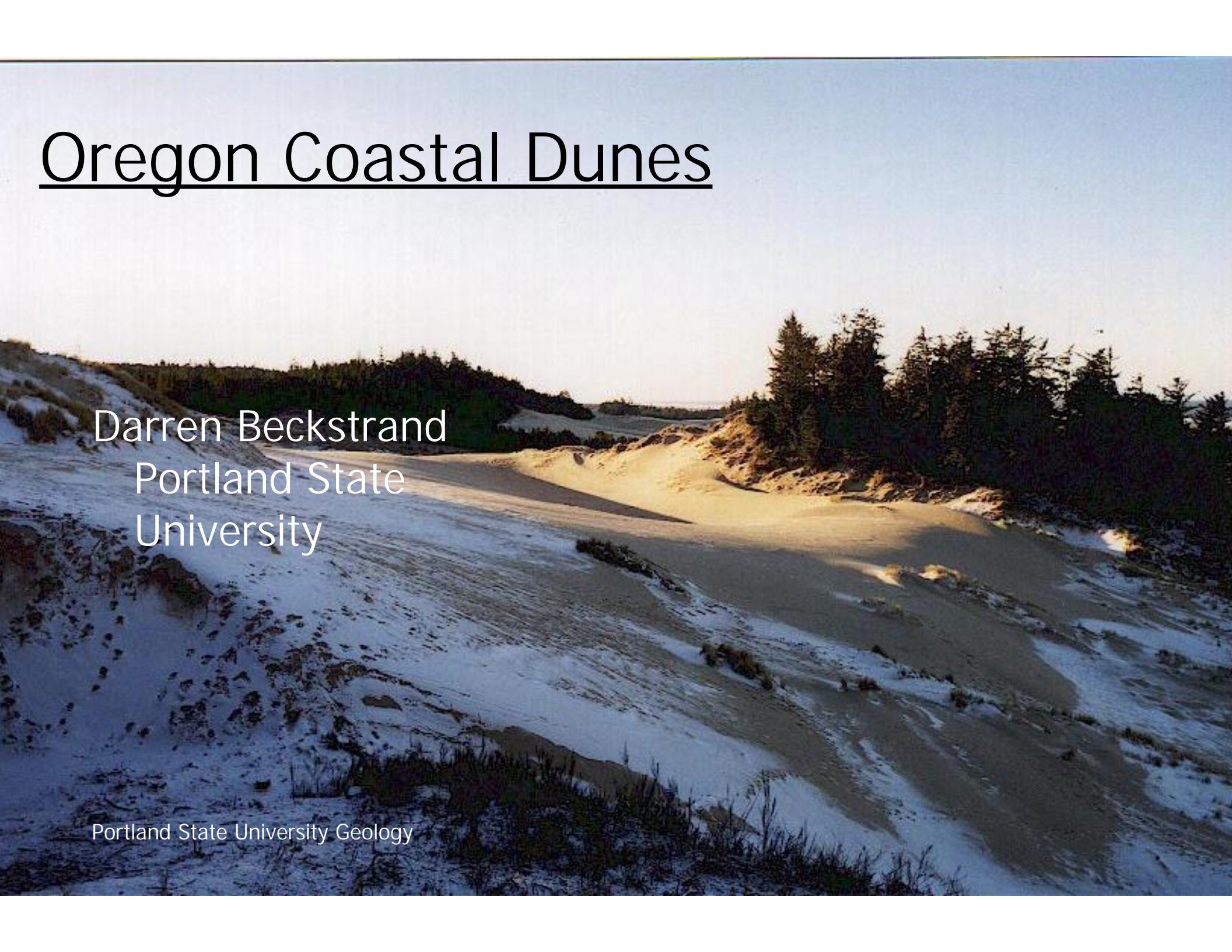


Oregon Coastal Dunes

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Outline

- General dune development
- Oregon's dune origins (proposed)
- Periods of stability
 - Paleosol development
- Wetland considerations

Coastal eolian dune development

- Creation depends on several different factors
 - Sand supply
 - Grain size
 - Wind velocities
 - Vegetation
- Diagnostic features
 - Very well sorted (poorly graded) sediment
 - Well-rounded sediment
 - Cross-bedded stratification w/ dips at ~ 25-30°
 - Typical ridge dominated topography

Oregon's dune development

- Old view
 - ~5,000 years old
 - Sand forced onshore during latest sea level transgression
 - Considered a young, temporary feature
 - Interspersed dune sheets along the coast
- New view
 - >30,000 years old (TL, ^{14}C dating)
 - Sand blown onshore from continental shelf during sea-level low stand
 - Considered a more long-term, regional feature
 - Many more dunes along coast than previously realized

Oregon Dunes NRA



Periods of stability

- Vegetation takes hold through:
 - Aggressive vegetation, decreased sand supply, changing climate
 - Somewhat of a chain reaction
 - Plant raise the bed roughness factor, thus decreasing the transport of sediment
 - This leads to soil development

Paleosol development

- Soil profiles are finer grained
 - Clay and silt sized concentration of sediments
 - From both eolian and pedological development
- Form irrespective of current topography
 - Distinctive 'tree islands' in current ODNRA dune sheet
 - Relict topographic highs in the old vegetated dunes surrounded by active sands
 - Paleosols form irregular, discontinuous fine grained beds at the surface and interior of dunes

Wetland considerations

- These paleosols are aquitards
 - Can be at random heights and shape with no surface expression
 - Thus creating localized perched water tables
 - Can be thin (<25 cm thick)
 - Compromised aquitards can easily transport contaminants through the highly permeable sand
 - Can be small or large
 - Further mapping (sub-surface included) required to fully understand the confining layer