

OREGON WINE

WILLAMETTE VALLEY

GEOLOGY & SOILS



OREGON
WINE
BOARD

UPDATED 4.1.17



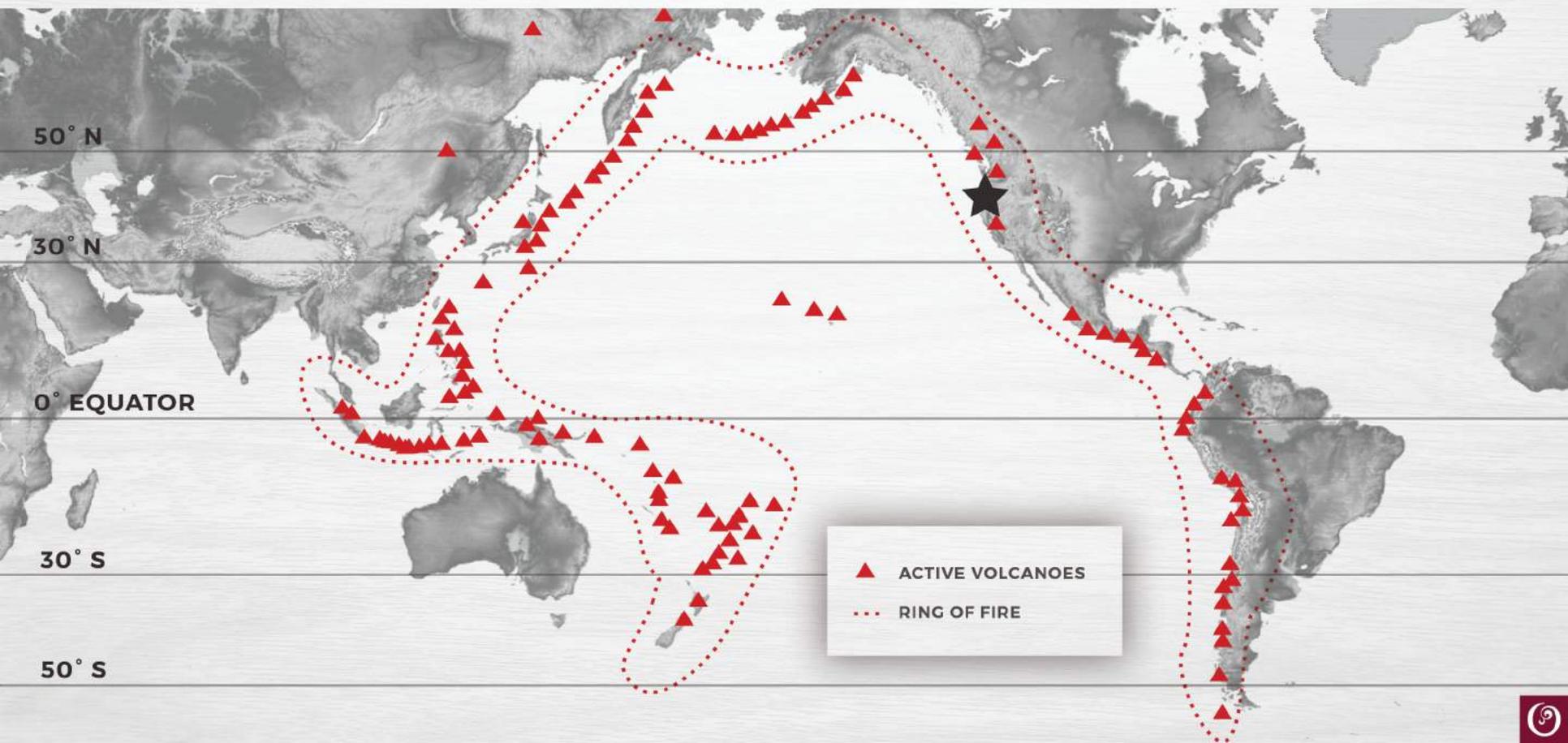
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OPEN A BOTTLE OF OREGON WINE AND TASTE A 200- MILLION-YEAR-OLD STORY.

Quite a feat for humble grapes that fought for existence in infertile soils. But in Oregon, we've always thought that struggle builds character, and our wines have that in spades.

SETTING THE SCENE

Oregon resides in the “Ring of Fire,” an area in the basin of the Pacific Ocean that is home to 75% of the world's volcanoes and 90% of the world's earthquakes.



DRAMATIC EVENTS FORM SPECTACULAR LAND

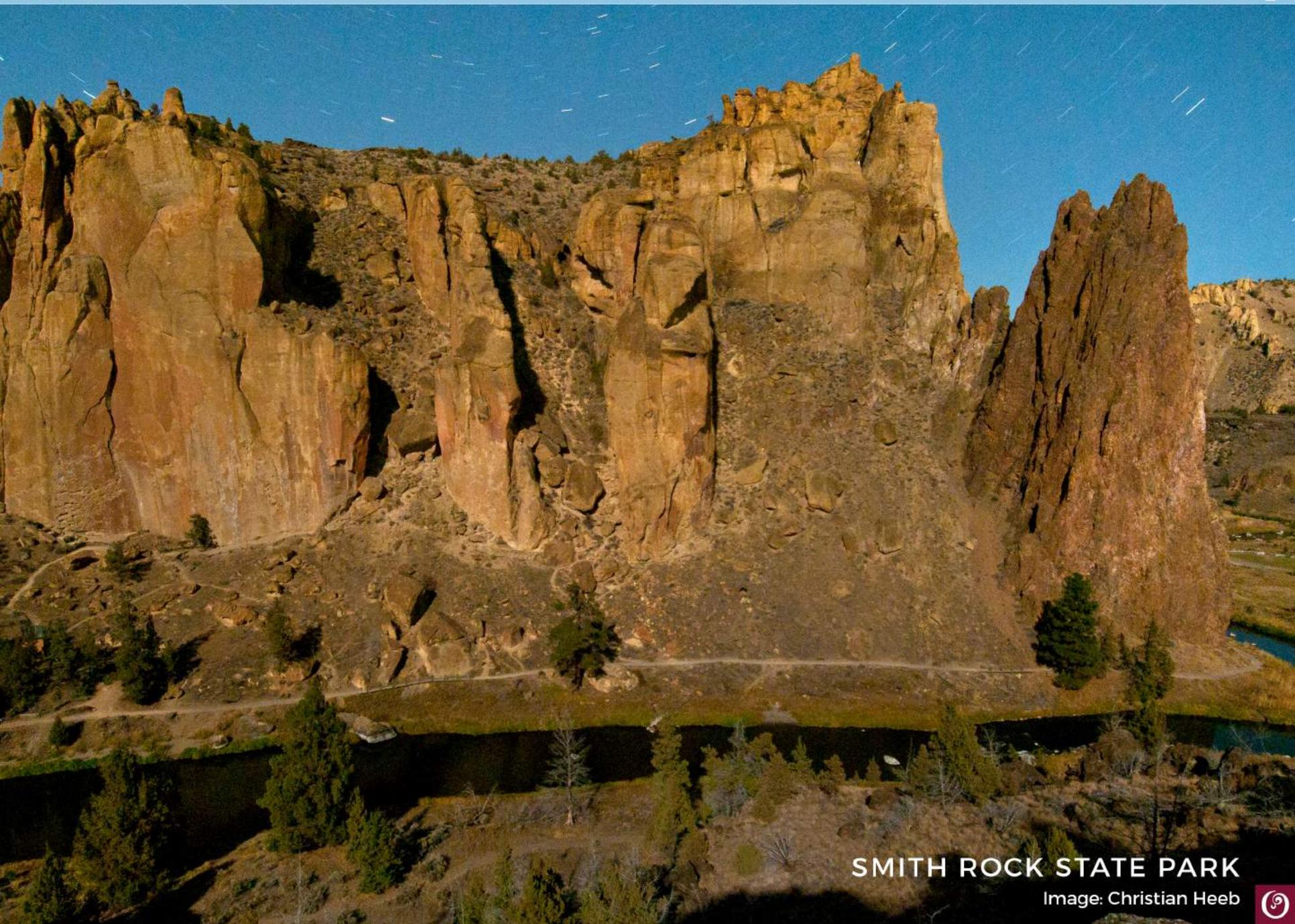
Oregon's position in the "Ring of Fire" has made for a magnificent, violent geological history that has carved dramatic landscapes and yielded some of the most diverse growing regions in the world.



CRATER LAKE NATIONAL PARK

Image: Travel Oregon





SMITH ROCK STATE PARK

Image: Christian Heeb





COLUMBIA RIVER GORGE

Image: Satoshi Eto





PAINTED HILLS, JOHN DAY FOSSIL BEDS NATIONAL MONUMENT

Image: Christian Heeb



The Willamette Valley's predominant grapegrowing soils are the result of millions of years of geological history.



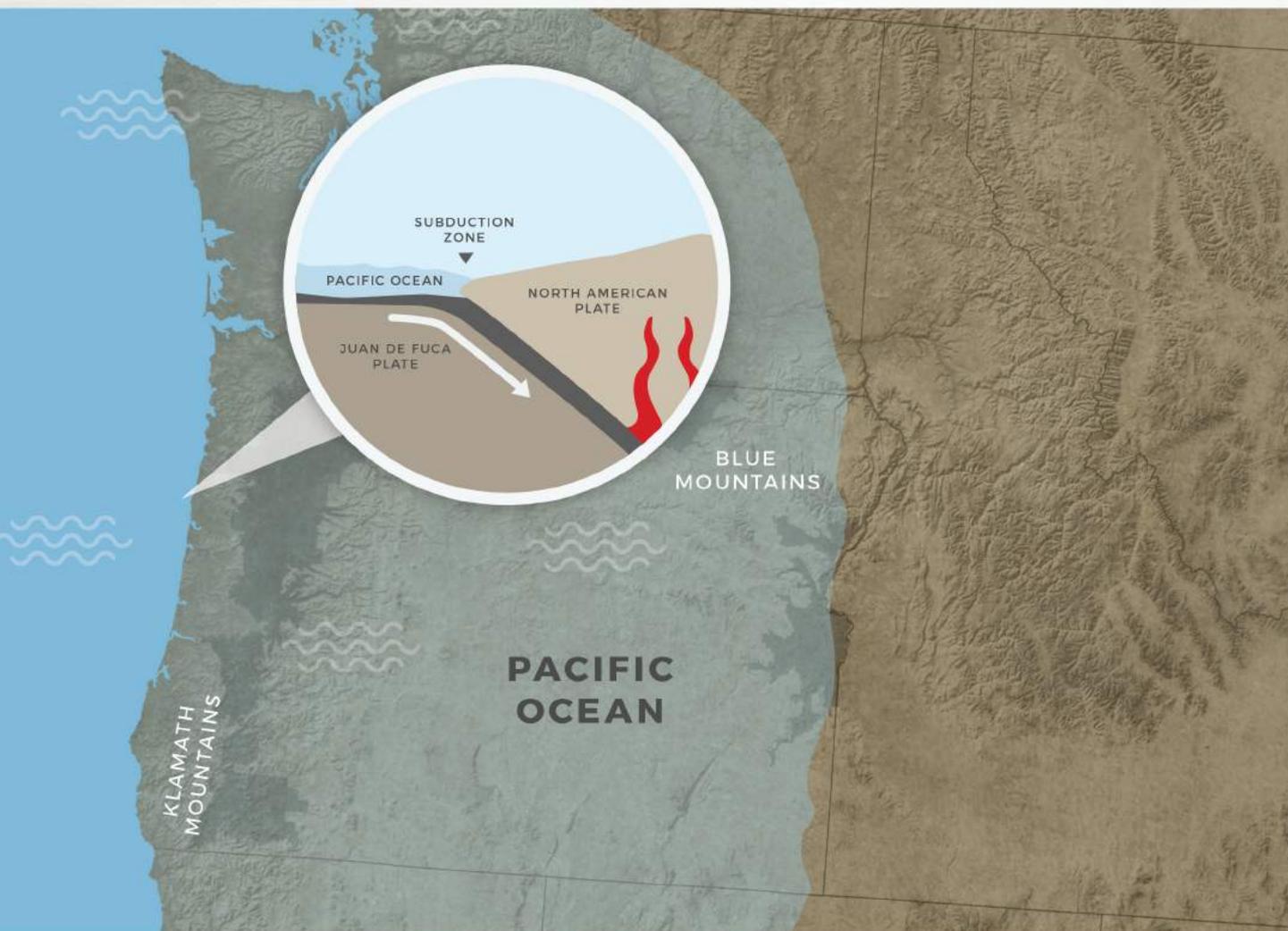
**Marine
Sedimentary**



Volcanic



Loess



200 MILLION YEARS AGO

PACIFIC OCEAN COAST REACHES IDAHO

- The Juan de Fuca tectonic plate begins to gradually subduct under the North American tectonic plate
- Ocean islands and pieces of the ocean bottom are "stuck" onto the West Coast as accreted terrane, creating Oregon's oldest mountains and gradually adding land mass to what is now Oregon

MARINE SEDIMENTARY SOILS FORM



MARINE SEDIMENTARY SOILS



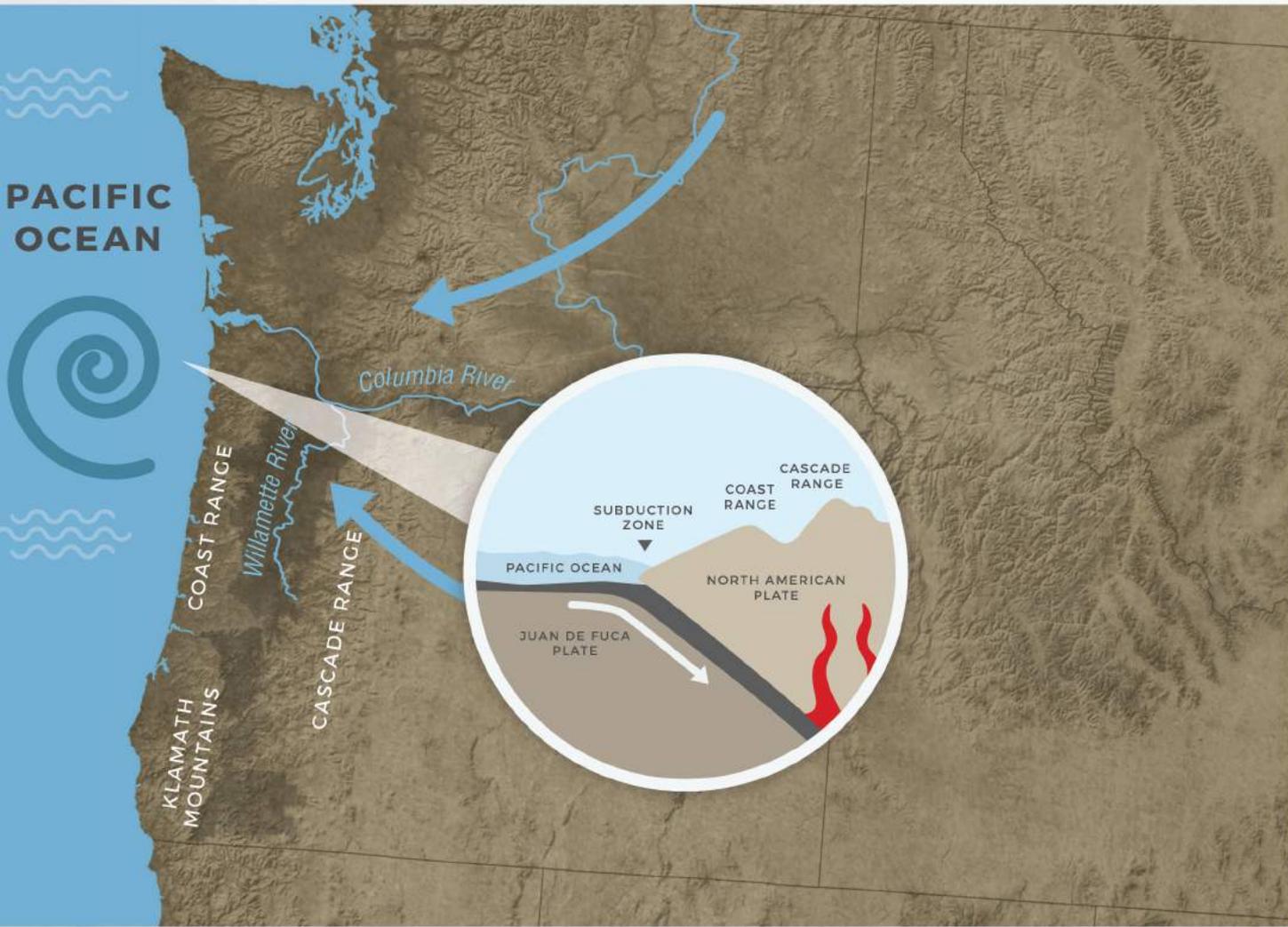
Developed from sandstone and shale on the ocean floor

Red color from years of weathering

Shallow soil with low nutrients

Forces grapevine roots to struggle and grow deep to source water and minerals

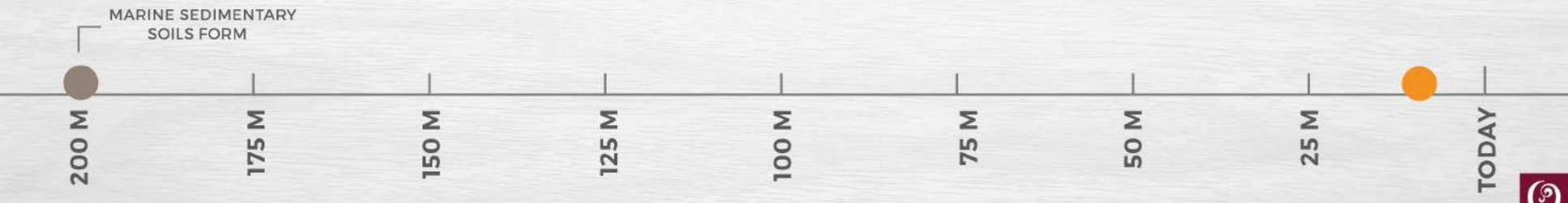
Includes: Willakenzie, Melbourne, Goodin, Wellsdale, Bellpine, Dupee soil series

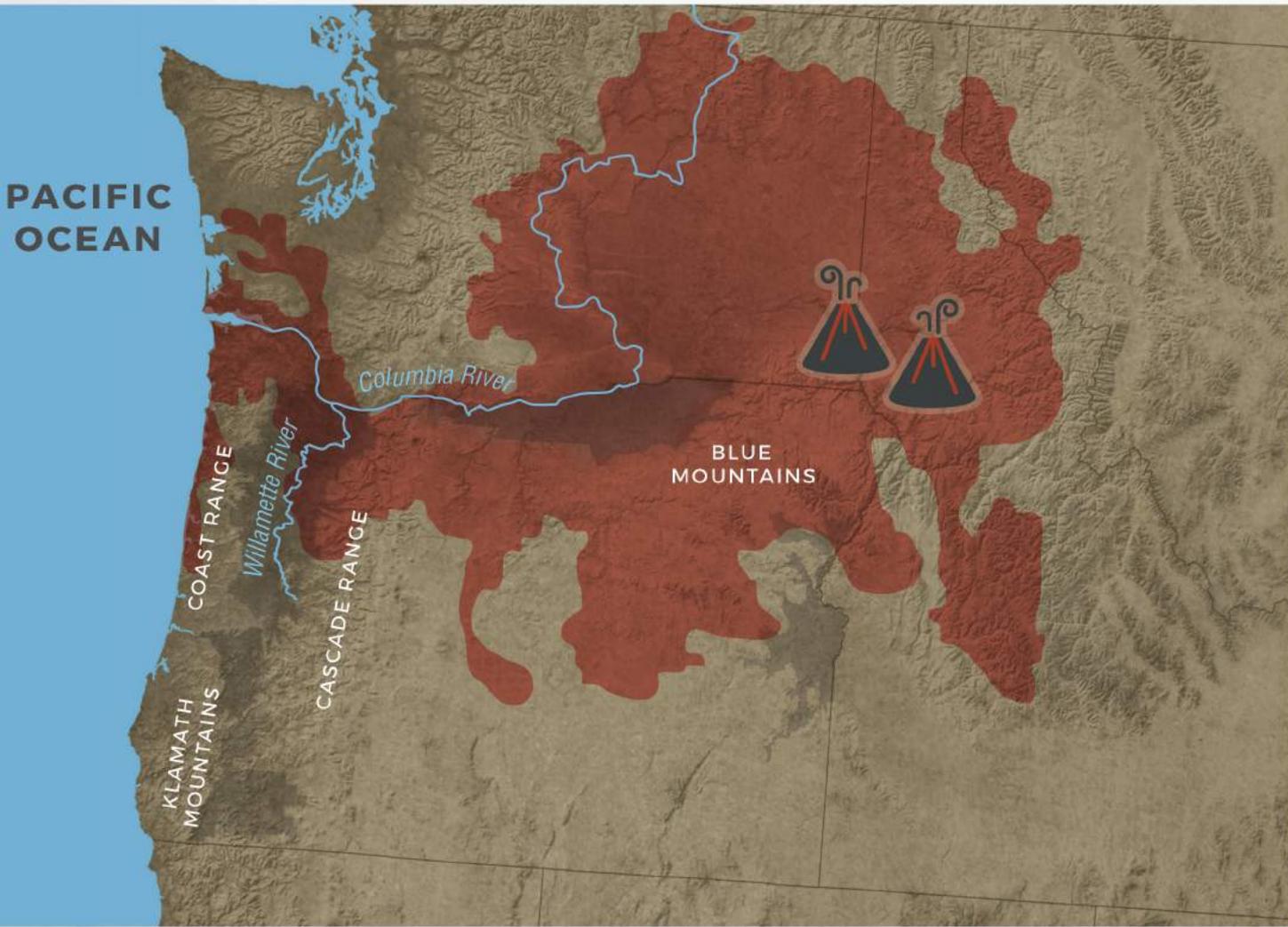


16-10 MILLION YEARS AGO

TECTONIC PLATES SHIFT

- The Juan de Fuca tectonic plate continues to subduct under the North American plate, uplifting coastal sediments to form the Coast Range above water
- Cascade Mountain Range forms inland above water from the accumulation of volcanic rock
- Oregon accumulates enough landmass due to accreted terrane to be completely above water

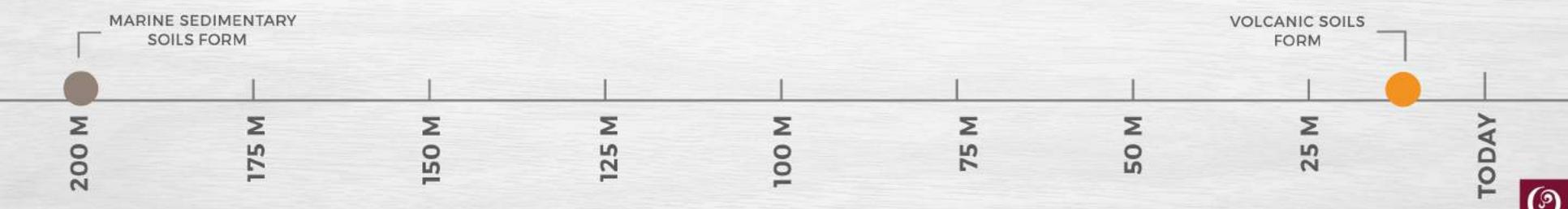




16-14 MILLION YEARS AGO

VOLCANOES CREATE COLUMBIA RIVER BASALT

- Multiple fissures create one of the largest volcanic events on earth between 17 and 6 million years ago, with 80% of activity occurring 16-14 million years ago
- Lava flows travel throughout northern Oregon
- Creates basalt bedrock in the Walla Walla Valley, Columbia Gorge and Willamette Valley winegrowing regions



VOLCANIC SOILS



Produced from weathering of
Columbia River Basalt bedrock

High in clay content and iron resulting
in a very distinguishable red hue

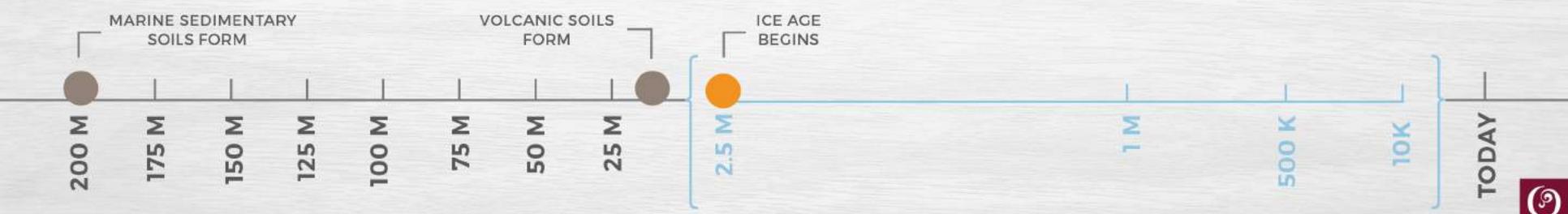
Offers fewer nutrients than marine
sedimentary soil

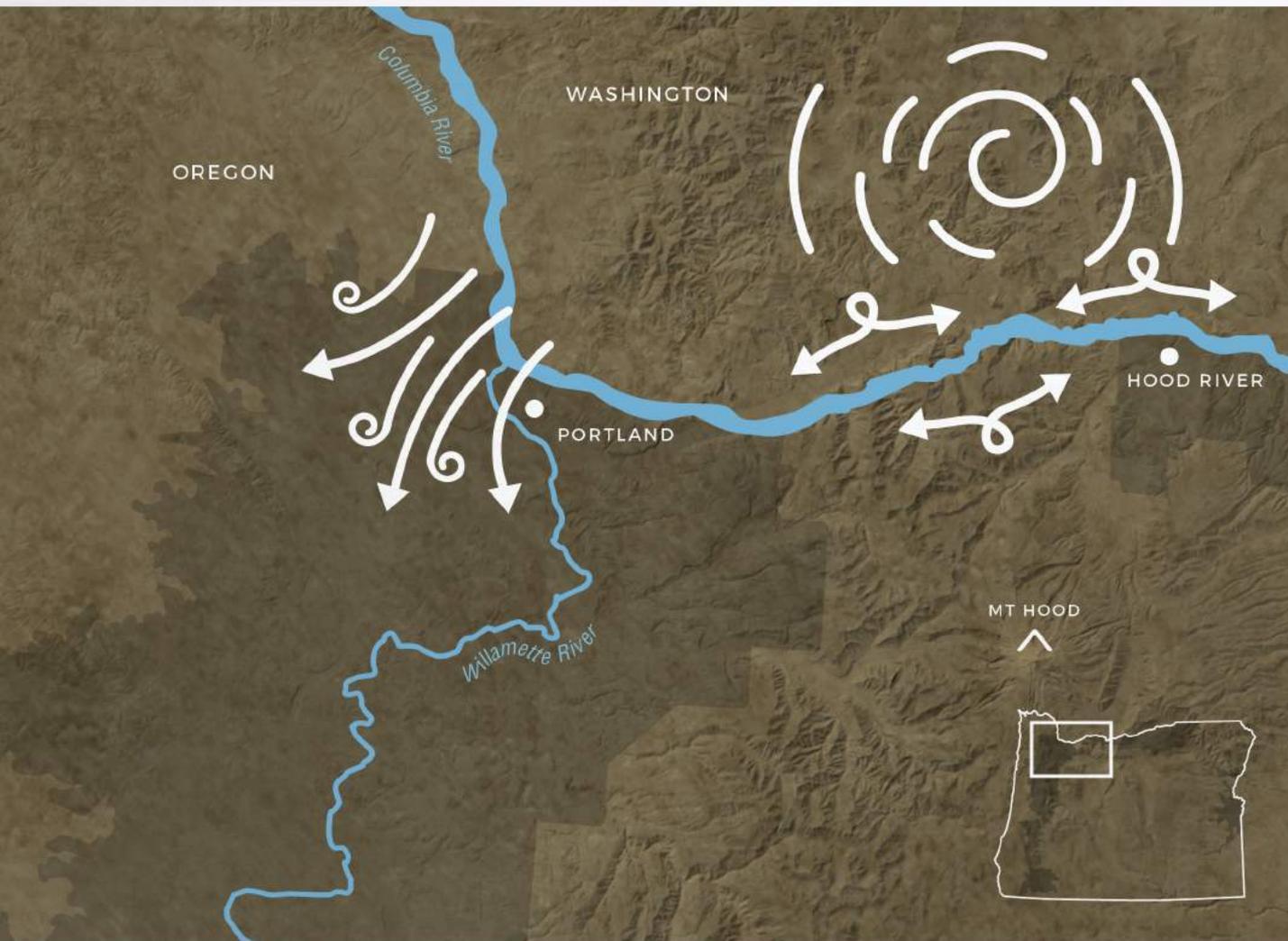
Includes: Jory and Nekia soil series



2.5 MILLION YEARS AGO

THE ICE AGE BEGINS

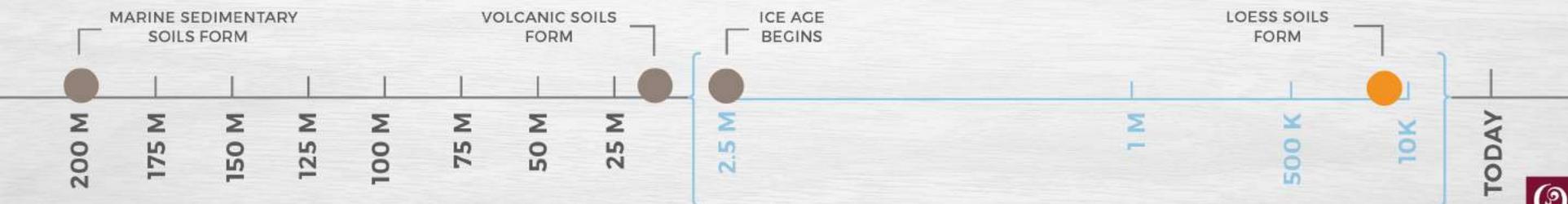




100,000-50,000 YEARS AGO

WIND BLOWS SILT FROM FLOOD PLAINS ONTO SURROUNDING SLOPES

- Ice Age creates a combination of weathered soil composed of rock ground down by glaciers
- This weathered soil, called loess, is fed into the streams and then blown onto the hillsides, especially at the northern end of the Willamette Valley



LOESS SOILS

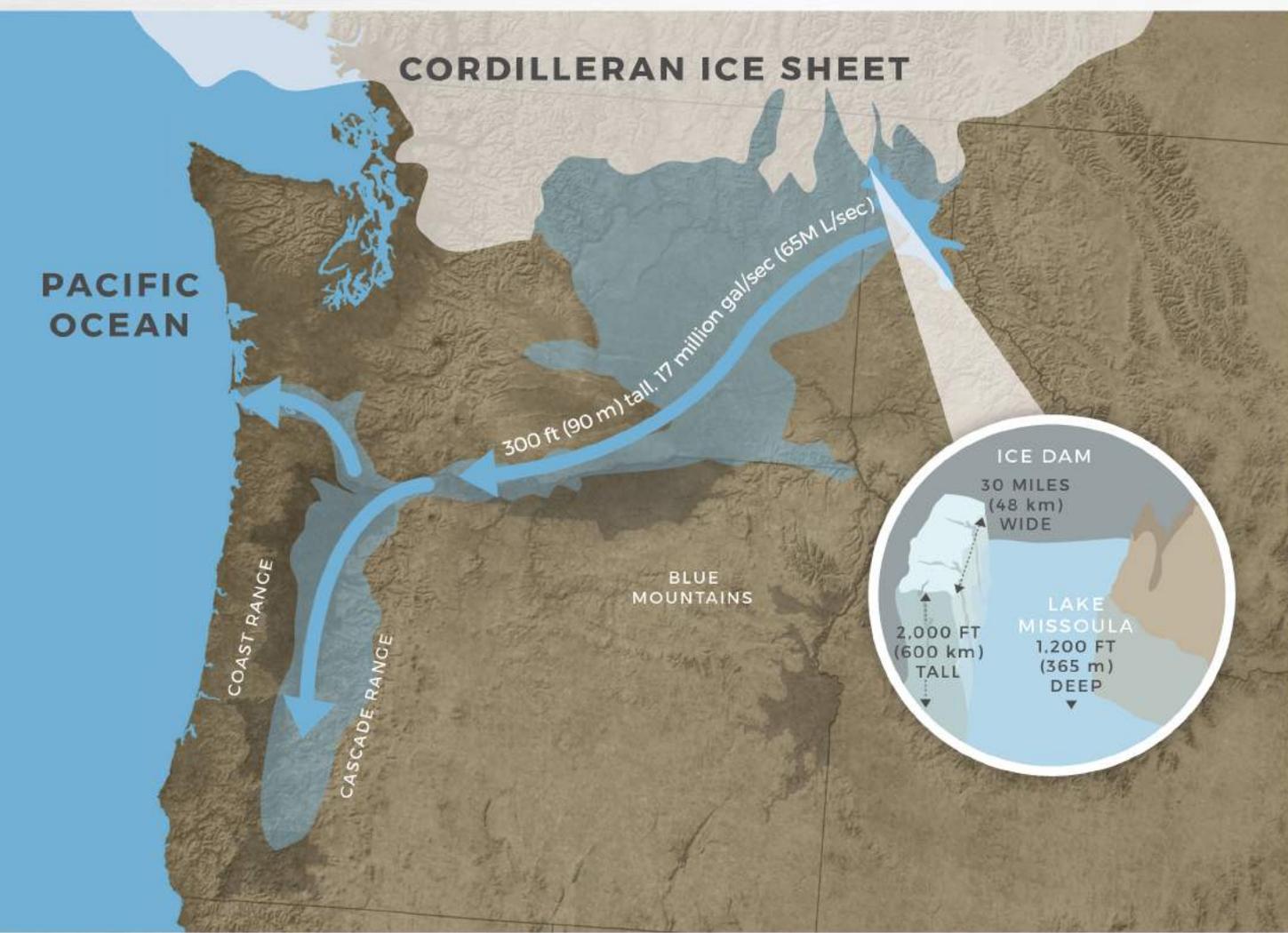


Weathered windblown soils developed on Columbia River Basalt bedrock have a brownish-red hue

Drains well, inducing an appropriate amount of vine stress, resulting in complex grapes

The youngest of Willamette Valley's three main winegrowing soils

Includes: Laurelwood soil series

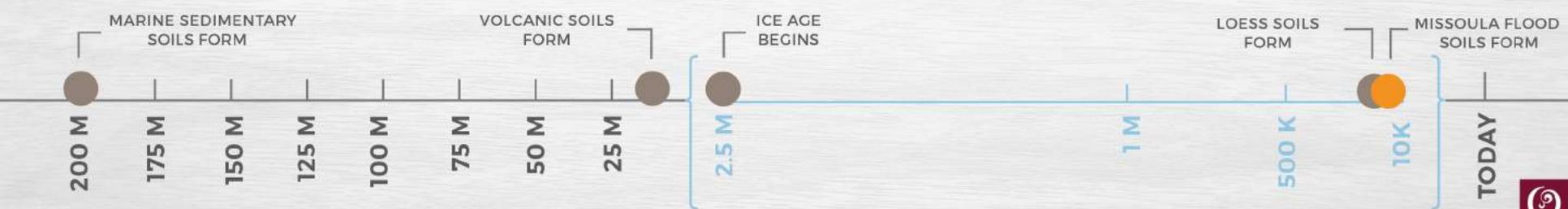


18,000-15,000 YEARS AGO

MISSOULA FLOODS

2,000 foot (600 m) high ice dam breaks 40+ times (about once every 50 years), causing a 300+ foot (90 m) wall of water that:

- Deepens and widens the Columbia Gorge
- Floods the Willamette and Columbia Valleys
- Deposits nutrient-rich loam on the Willamette Valley floor



MISSOULA FLOOD SOILS



Fertile topsoil, not ideal for winegrape growing, but great for other crops such as berries, hazelnuts and grass seed

Relatively balanced amounts of sand, silt and clay

Found along the Columbia Gorge banks and Willamette Valley floor