Terrestrial Biomes

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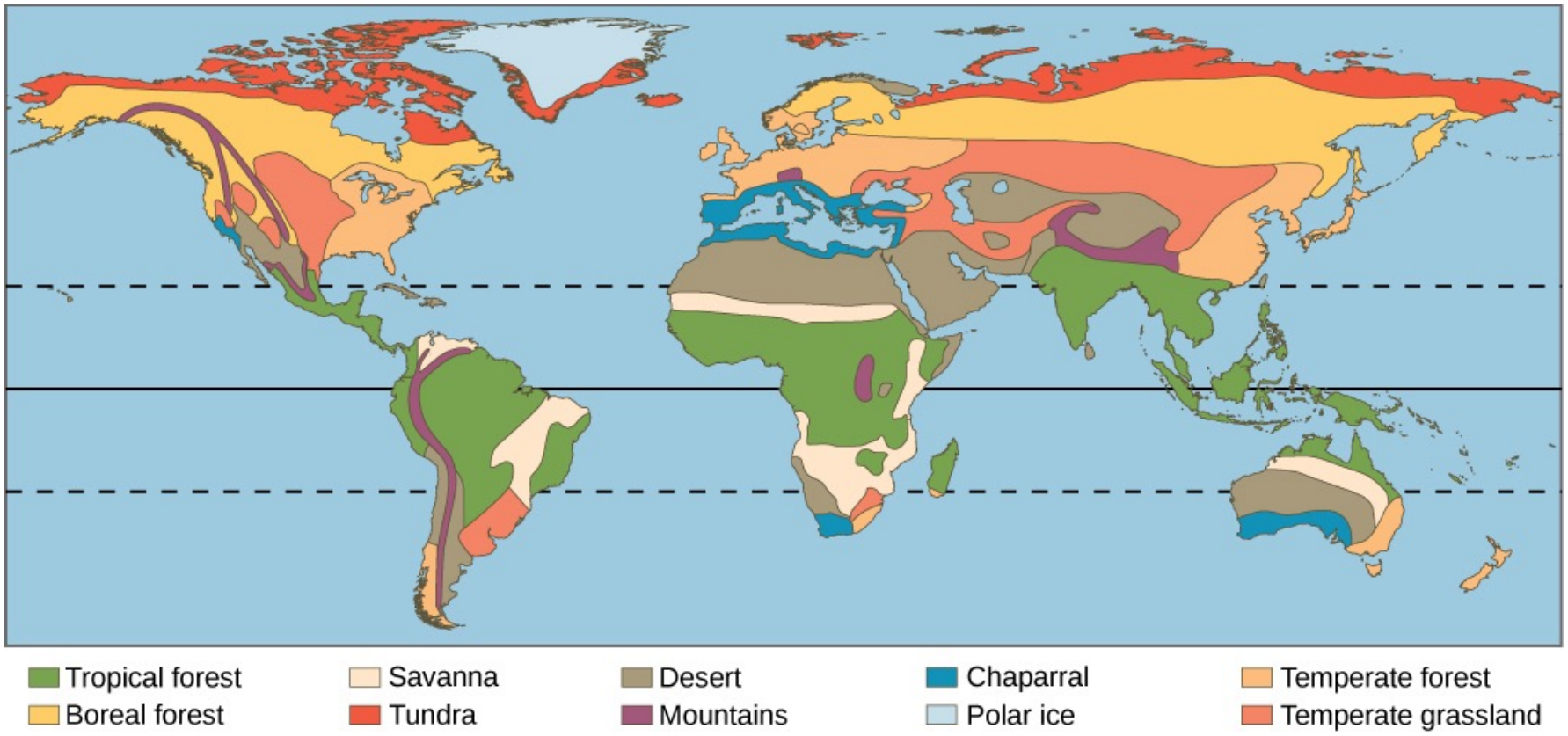
Worldwide Distribution of Terrestrial Biomes



From “Environmental Issues” by Andrew Frank https://pressbooks.bccampus.ca/environmentalissues/front-matter/introduction/

Tropical and Subtropical

Biome Type	Temperature Range	Annual Precipitation	Geographical Distribution
Tropical Rainforest	Mild to hot temperatures.	125 - 660 cm (50 - 200 in)	Equatorial regions throughout the world.
Savanna	Mild to hot temperatures.	51 - 127 cm (20-50 in)	Portions of Africa, Australia, and South America.
Subtropical Desert	Daytime soil surface > 60°C (>140°F) to near freezing at night.	< 30 cm (< 12 in)	25° north and south of equator and downwind of mountains.

Broadleaf trees with spreading roots. Poor soils due to leaching of nutrients by rain. Most biodiverse of all biomes on land.

Grasses with scattered trees. Extensive root system to survive the extensive dry season and occasional fires.

Low diversity and low vegetation density. The few perennials have reduced foliage and the stems are adapted for water storage.

Temperate

Biome Type	Temperature Range	Annual Precipitation	Geographical Distribution
Mediterranean (Chaparral Scrub Forest)	Hot summers / mild winters.	65 - 75 cm (26 - 30 in)	California, Mediterranean, and portions of Australia.
Temperate Grassland (Prairies, Steppes)	Hot summers / cold winters, with fluctuations every year.	25 - 89 cm (10 - 35 in)	Central US and Central Eurasia.
Temperate Forest	Hot summers / cold winters.	75 - 150 cm (30 - 59 in)	Eastern US, Western Eurasia, East Asia.

Mostly shrubs, some depend on fires to release nutrients and some species have seeds that germinate only after a fire.

Grasses with deep roots and deep rich soil. The lack of trees is attributed to low rainfall, grazing, and occasional fires.

Broadleaf deciduous trees with some conifers. Rich soil due to thick leaf litter that minimizes leaching of nutrients.

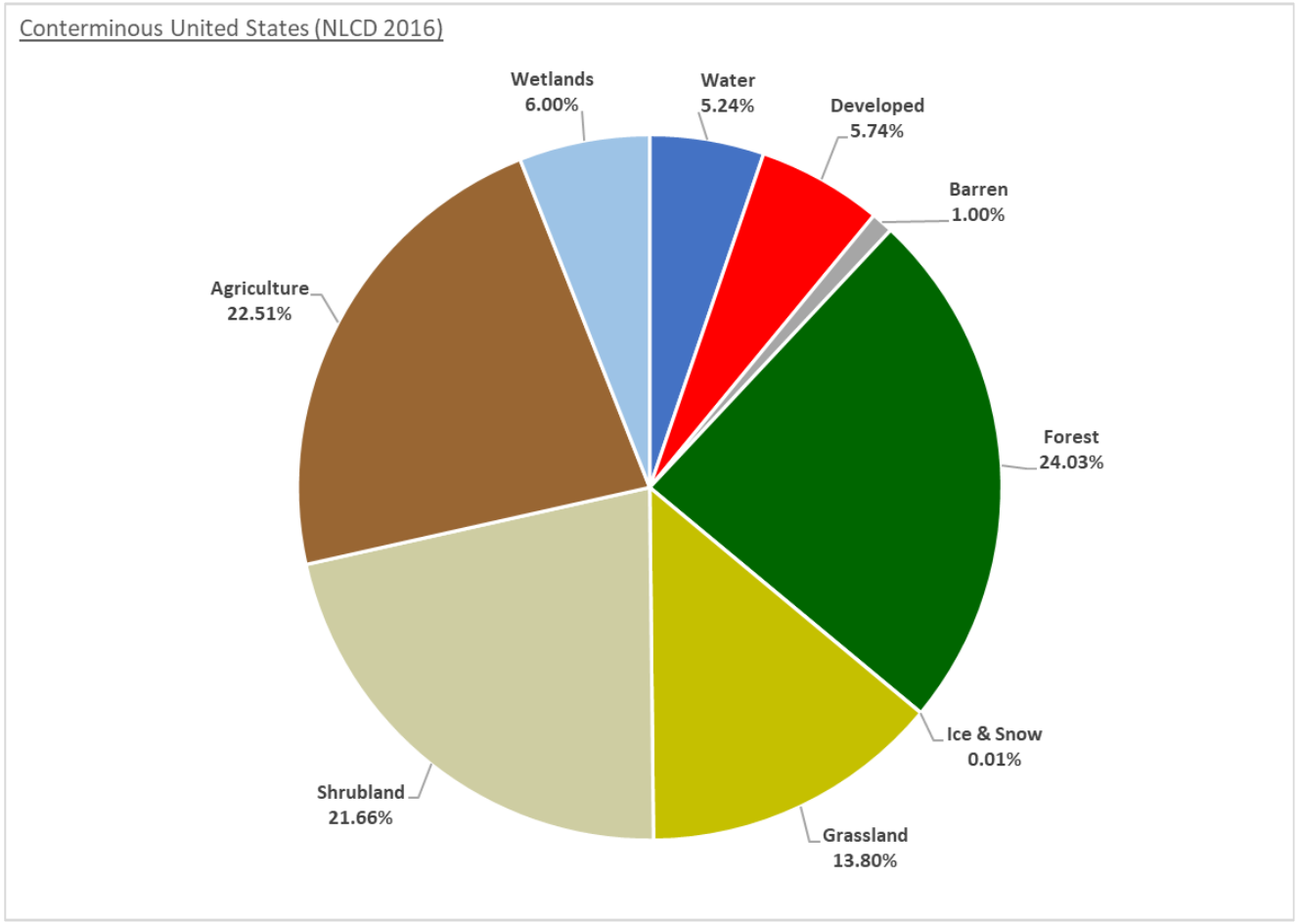
Arctic and Subarctic

Biome Type	Temperature Range	Annual Precipitation	Geographical Distribution
Boreal Forests (Taiga, Coniferous)	Cold dry winters and short wet summers	40 - 100 cm (16 - 39 in)	Most of Alaska, Canada, Russia, and Scandinavia.
Tundra	-34°C - 12°C (-29°F - 52°F)	15 - 25 cm (6 - 10 in)	Greenland, and northern portions of Alaska, Canada, and Russia.

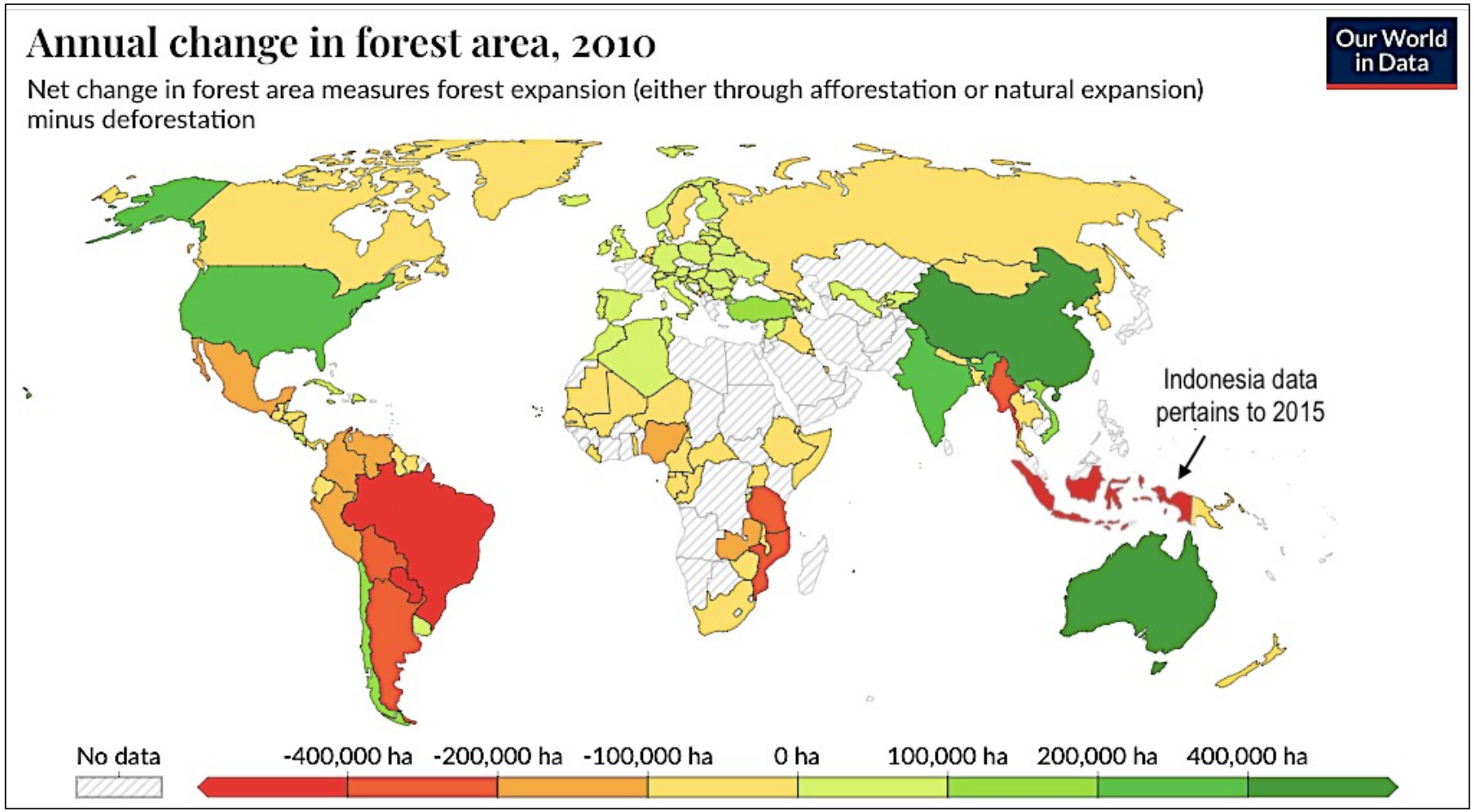
Low biodiversity with mostly needle-leaf evergreens. Soils are acidic and nitrogen-poor due to slow decomposition of leaf litter.

Low biodiversity with no trees due to permafrost layer beneath the soil. Plant growth is rapid during summer due to 24 hours of sunlight. Low precipitation and low evaporation.

According to the US Geological Survey, as of 2016, slightly over 28% of terrestrial biomes in the US have been developed for agriculture and other purposes.

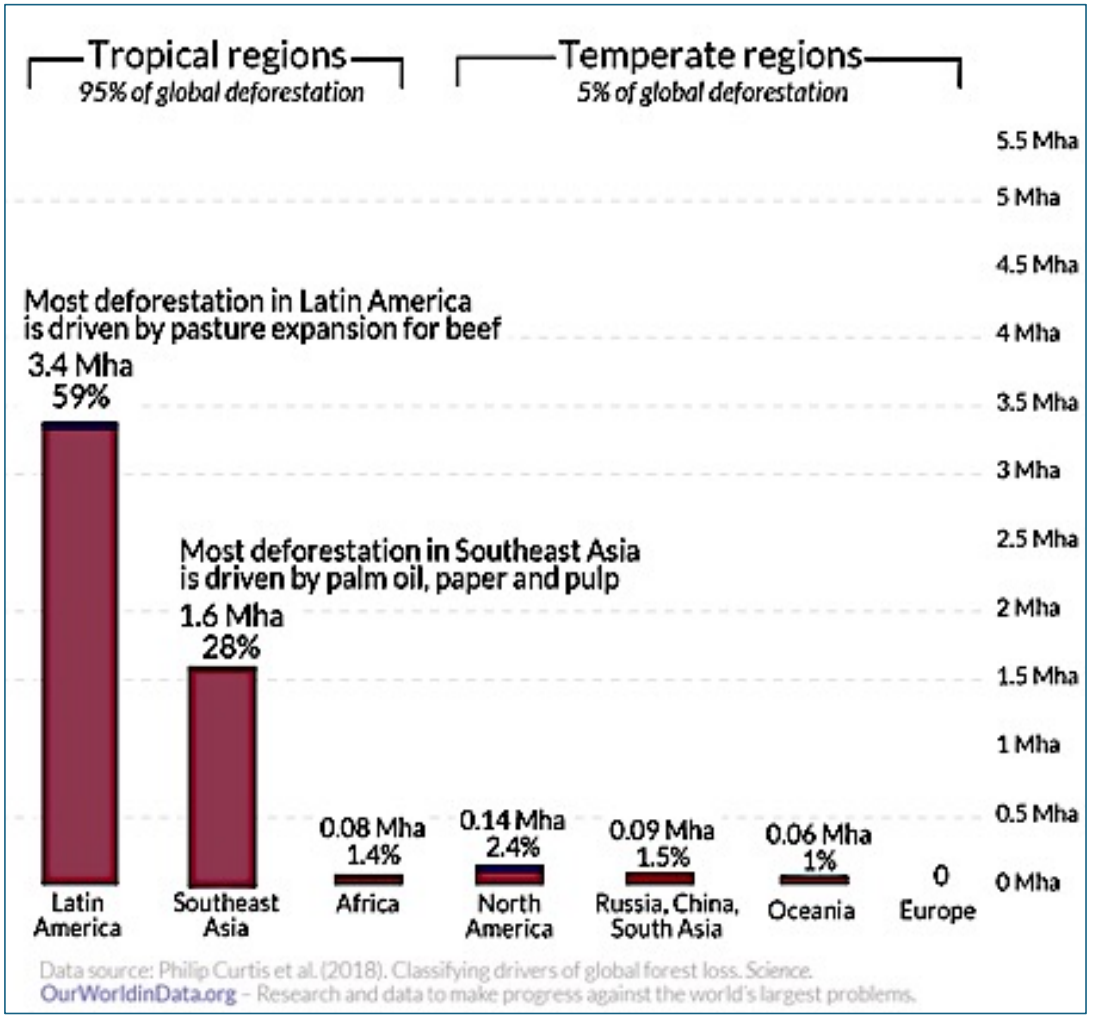


The biggest ongoing threat to terrestrial ecosystems is **deforestation**. Even though tropical forests are most at risk, Canadian and Russian forests face ongoing pressures due to **worldwide lumber demand**.



Worldwide, most deforestation takes place in **Latin America** and **Southeast Asia**.

This is driven largely by the **beef** and **palm oil** production.



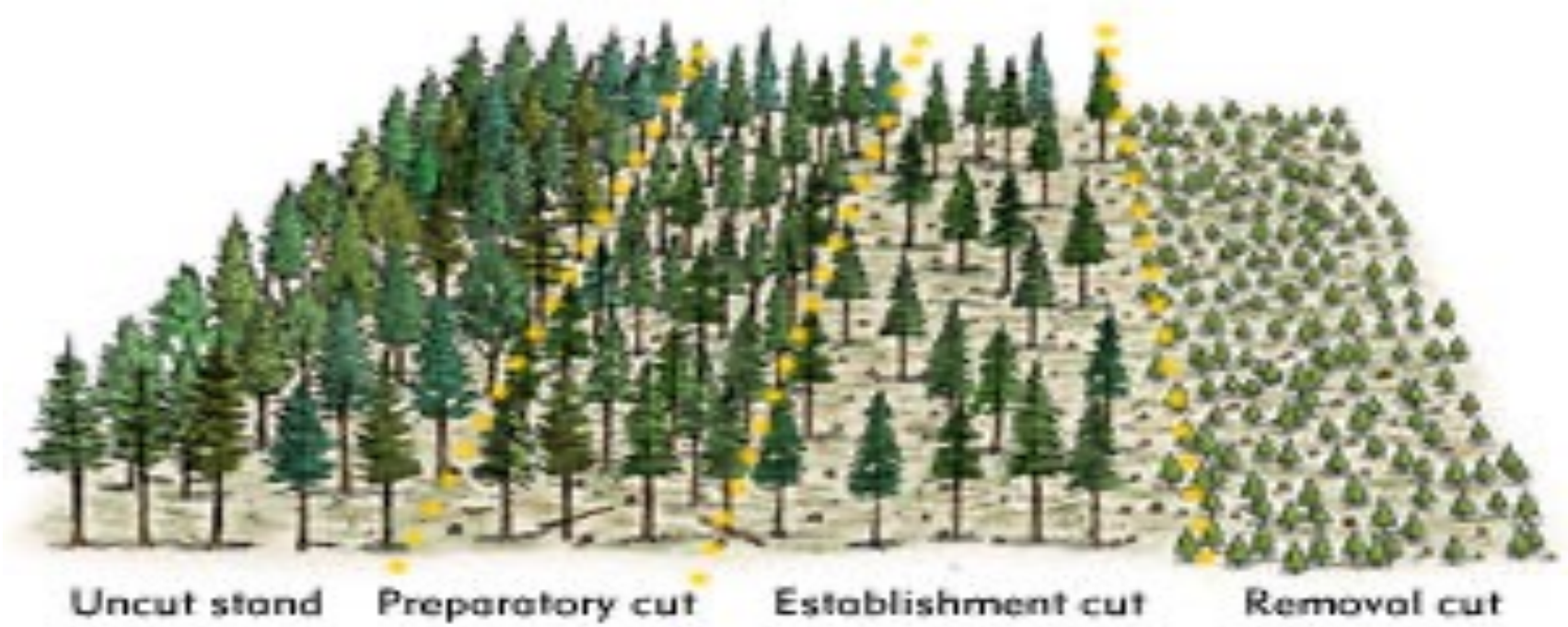
Clear-cutting for lumber is the fastest and cheapest way to harvest wood but it increases erosion and destroys habitats.

When clear-cutting is followed by tree-planting, the resulting even-aged "**plantation forest**" fails to provide the wide range of micro-habitats found in **old-growth** forests of different species and uneven-aged trees.

Selective cutting of trees minimizes environmental impacts, but this strategy is expensive because it is time-consuming for the small amount of lumber harvested.

Strip logging strikes a balance between the environmental expense of clearcutting and the financial expense of selective cutting.

Cutting in thin strips minimizes the damage of erosion while facilitating the natural process of succession.



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