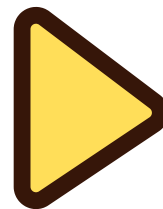


Fold and Forecast

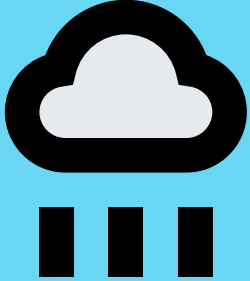
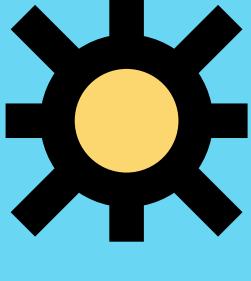



How can we predict weather
and climate events?

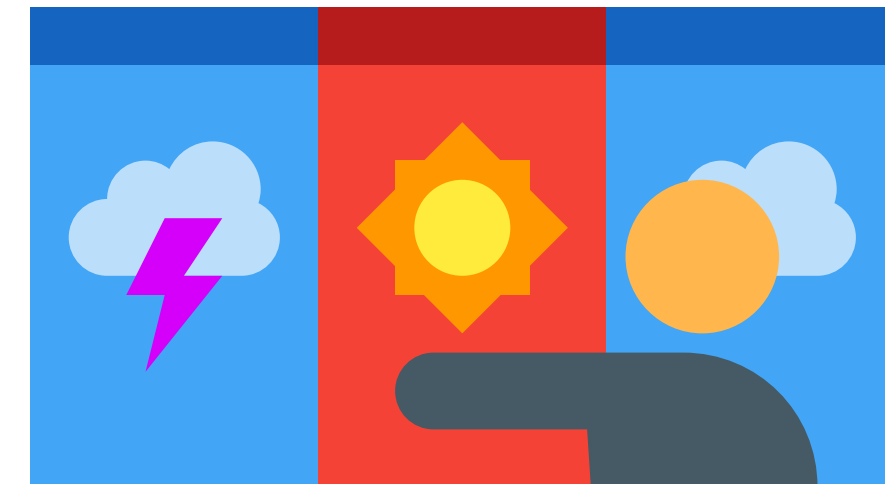


How do we convey information when we aren't sure about what's going to happen?

Weather Forecasts

		
21°	31°	23°

50%



Forecasting with Percents

Today's Forecast for Manhattan, NY

Morning

45°



--

Afternoon

44°



89%

Evening

45°



78%

Overnight

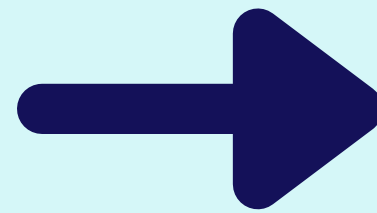
49°



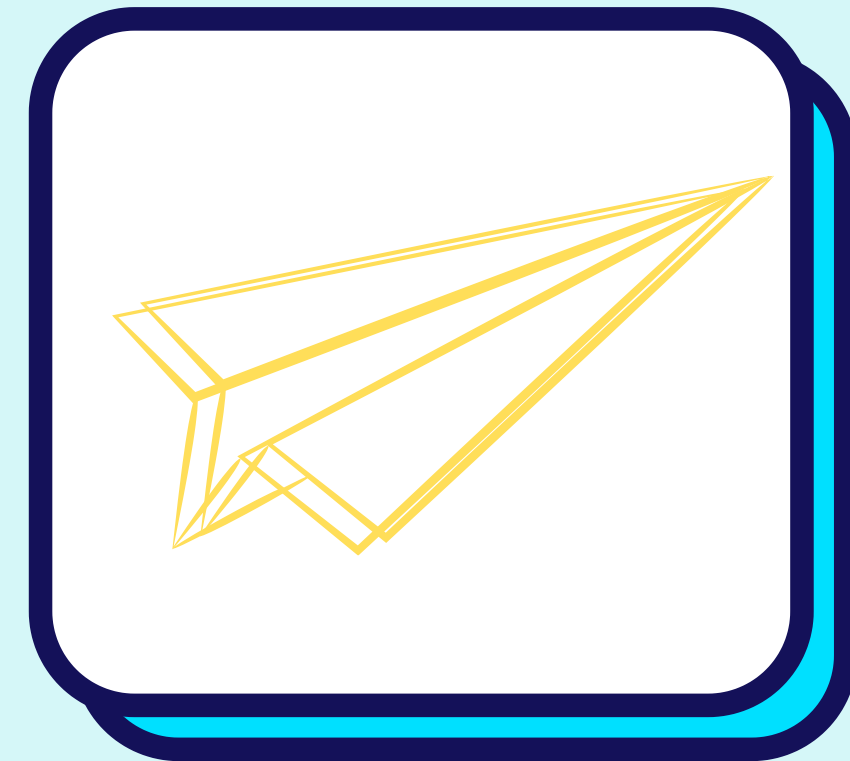
99%

What do we use to make predictions?

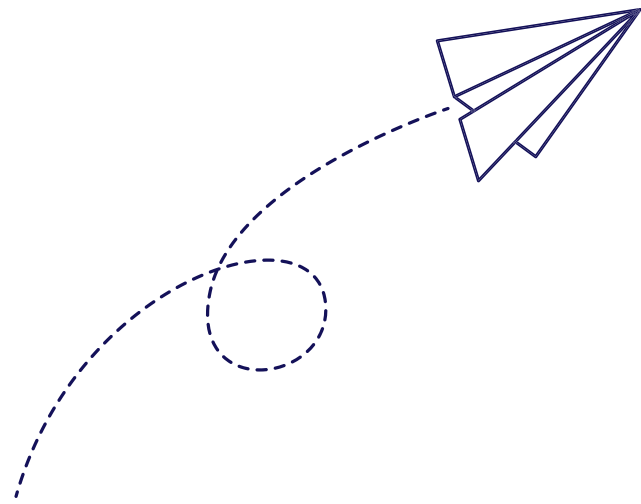
Climate Models



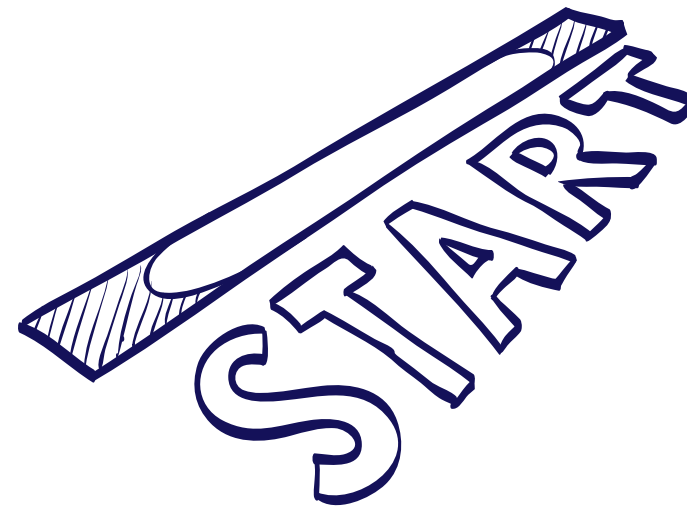
Paper Airplanes



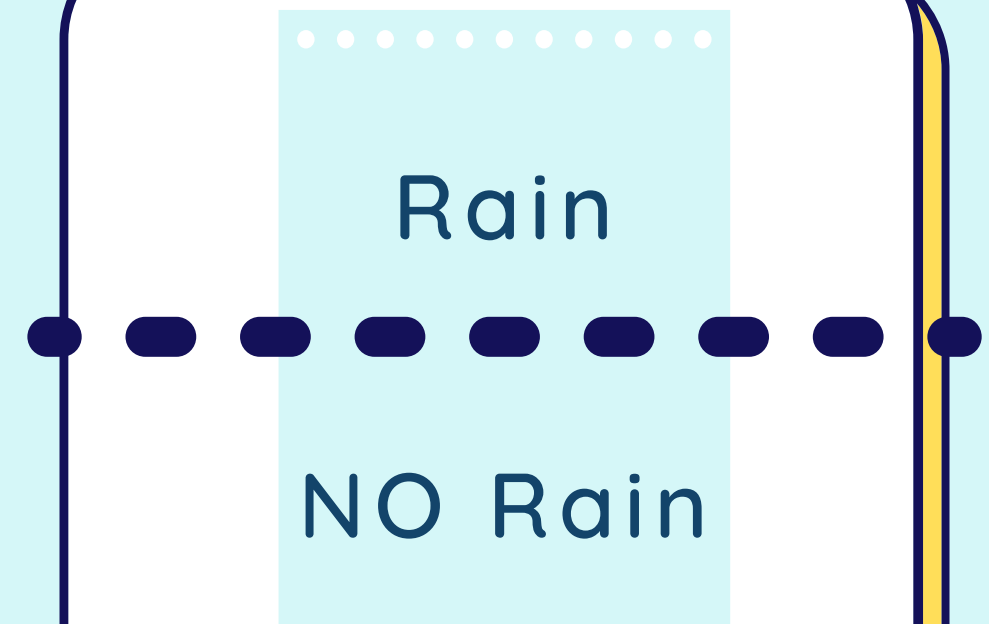
What You'll Need



3-4 paper
airplanes



Place marker



Forecast Label

Weather Forecast Set Up

RAIN

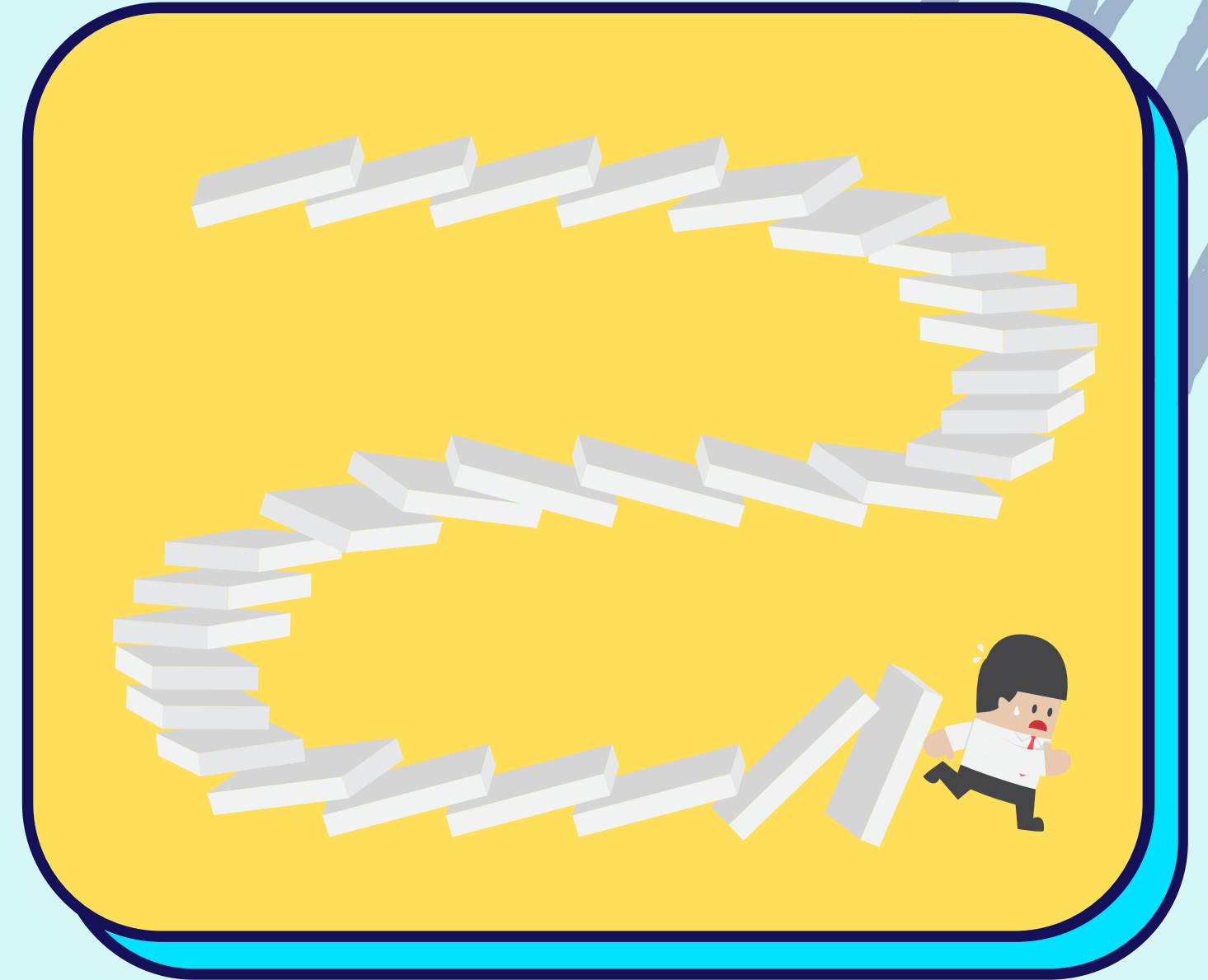
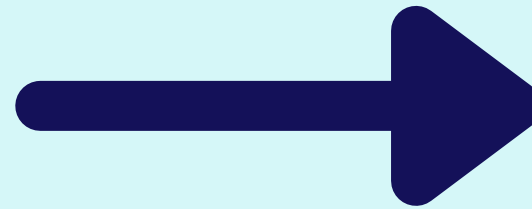
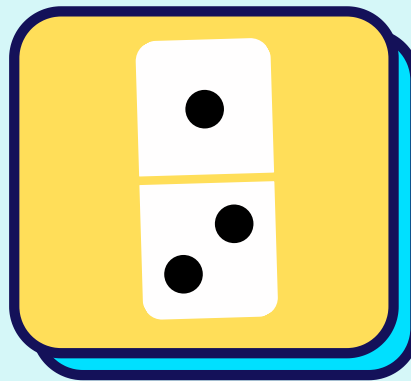
NO RAIN

Let Your Airplanes Fly!



For the most accurate results: stand
in the same place and try to throw
each airplane the same way each
time

Watch out for the Butterfly Effect

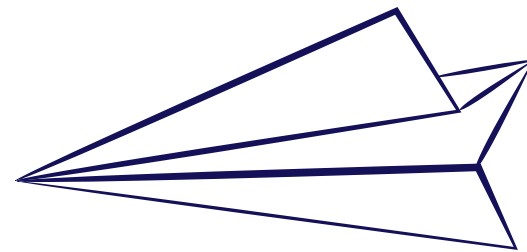
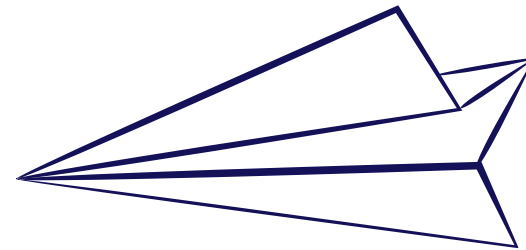
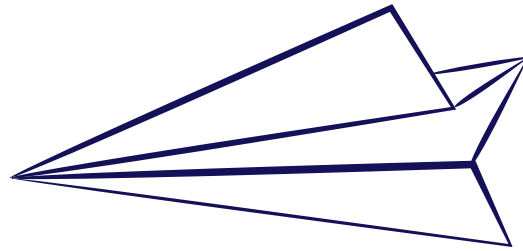


Small Changes

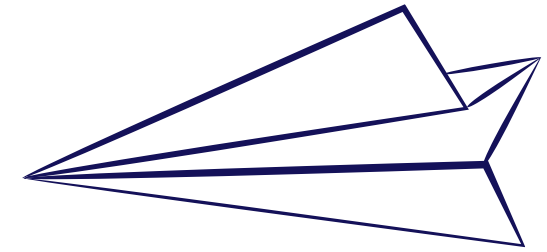
Big Impacts

Observe your Experiment

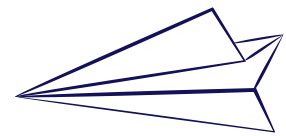
RAIN



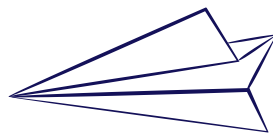
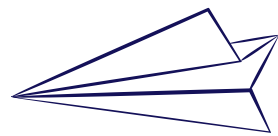
NO RAIN



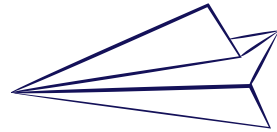
Make a Forecast



RAIN



NO RAIN



$$\frac{3}{4}$$

airplanes
landed in
"RAIN"

75%

of rain

Round 2

El Niño Southern Oscillation (ENSO)

LA NIÑA

NEUTRAL

EL NIÑO

What is ENSO?

Every few years, the surface temperature of the tropical Eastern and Central Pacific Ocean moves between 3 phases:

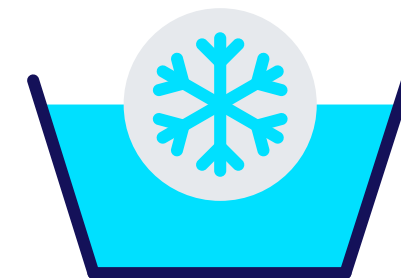
Warm
El Niño



Average
Neutral



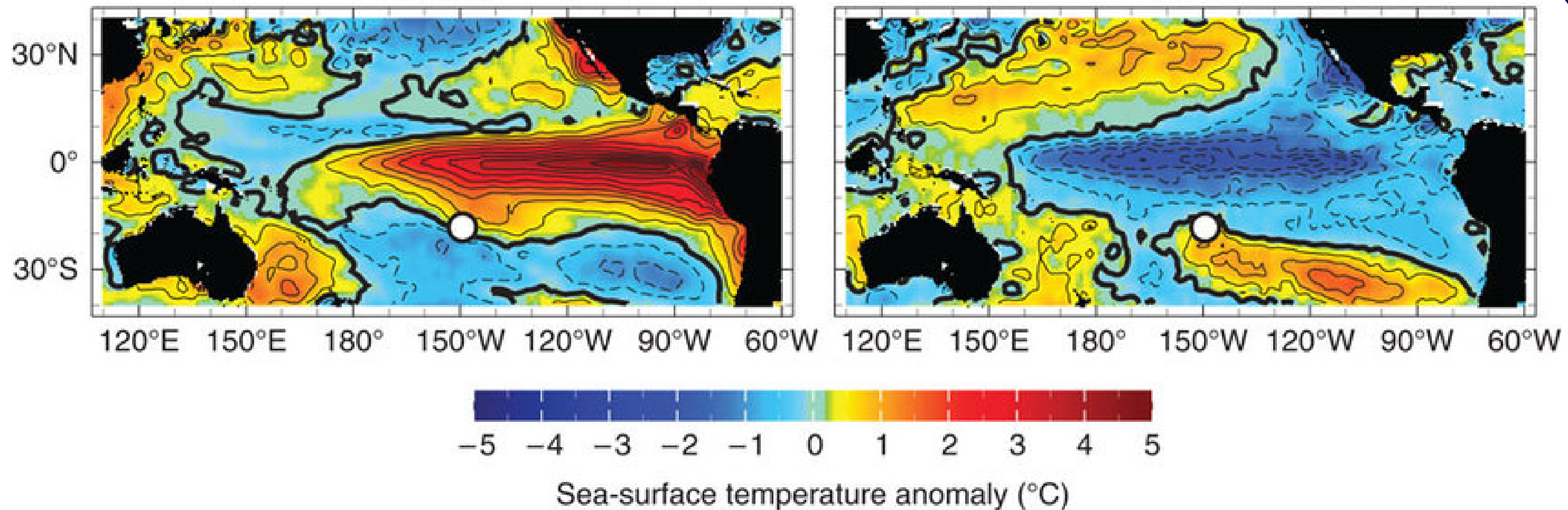
Cool
La Niña



What is ENSO?

El Niño

La Niña



Why is ENSO Important?

1

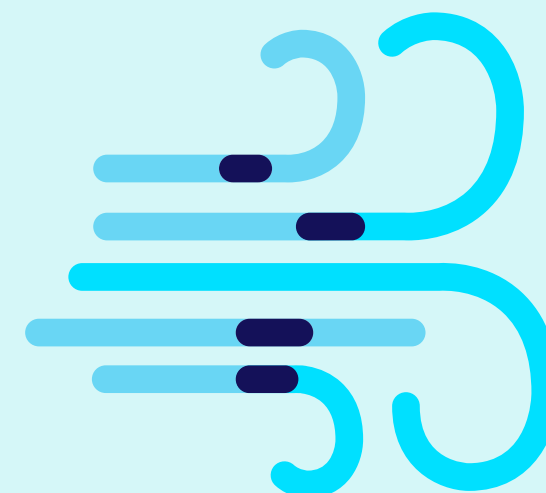
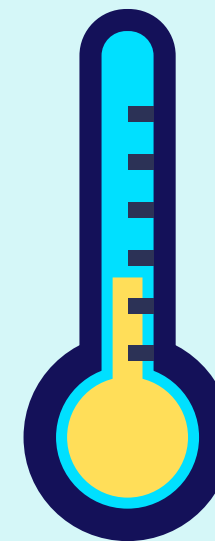
The temperature changes in the sea surface from ENSO can change the temperature in places all over the world

2

ENSO can impact precipitation and cause droughts across the globe, impacting agriculture

3

ENSO can affect wind direction and strength



ENSO Forecast Set
Up

EL NIÑO

NEUTRAL

LA NIÑA

Let Your Airplanes Fly!

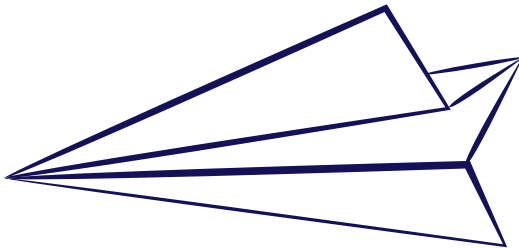
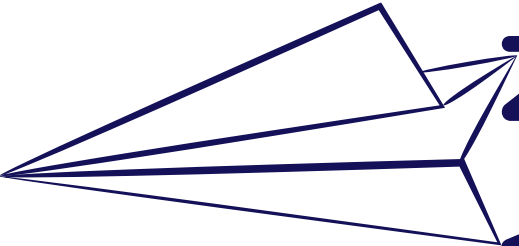
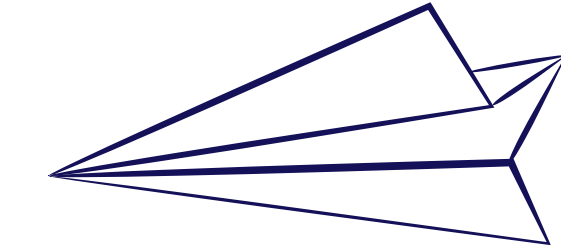
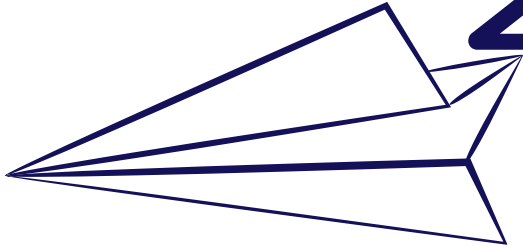
For the most accurate results: stand
in the same place and try to throw
each airplane the same way each
time

ENSO Forecast Set
Up

EL NIÑO

NEUTRAL

LA NIÑA



Make a Forecast

EL NIÑO

NEUTRAL

LA NIÑA

$\frac{3}{4}$

airplanes
landed in
"LA NIÑA"

$\frac{1}{4}$

airplanes
landed in
"NEUTRAL"

75% of LA NIÑA

25% of NEUTRAL

Summary

Scientists use climate models to predict how the earth may work,

BUT...

There is always uncertainty, which is why we see "% chance" in forecasts

Discussion Questions

1

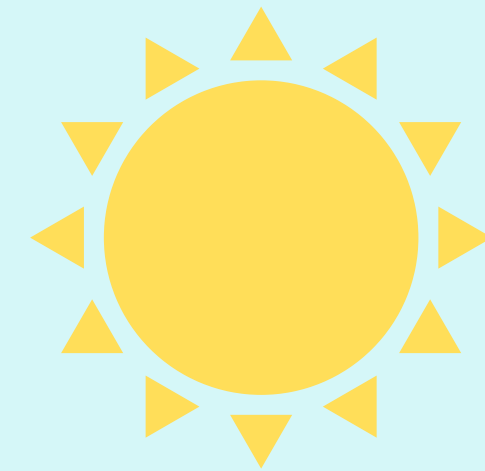
How do you use weather forecasts in your everyday life?

2

Why are forecasts important? Why do they help in disaster situations like a tornado or hurricane?

3

What does a forecast that says "50% chance of rain" mean?



Thank you!

For more information, please contact
outreach@iri.columbia.edu

COLUMBIA CLIMATE SCHOOL
INTERNATIONAL RESEARCH INSTITUTE
FOR CLIMATE AND SOCIETY

