
NASA
SNACK
TIME
WITH NASA
CHEESE BOARD

1
00:00:00,000 --> 00:00:04,000
Kathleen: Welcome to Snacktime with NASA![barking] [laughs]

2
00:00:04,000 --> 00:00:08,000
Okay… Welcome to Snacktime with NASA! I'm your host, Kathleen

3
00:00:08,000 --> 00:00:12,000
Gaeta, and this is my dog Buoy, and we both really love cheese.

4
00:00:12,000 --> 00:00:16,000
So this past year at home, I think we've all learned to appreciate the little things in life, and again,

5
00:00:16,000 --> 00:00:20,000
one of those things for us is a nice, big cheese board. So today,

6
00:00:20,000 --> 00:00:24,000
I'm gonna show you how I like to prepare my own, and where NASA actually fits

7
00:00:24,000 --> 00:00:28,000
on the board. Many people don't know that NASA has a lot to do with the food

8
00:00:28,000 --> 00:00:32,000
on your plate, so we're gonna highlight some of the foods NASA helps grow,

9
00:00:32,000 --> 00:00:36,000
using data from space. Now, when you think of NASA and dairy, especially

10
00:00:36,000 --> 00:00:40,000
you might think of freeze-dried ice cream for astronauts, but

11
00:00:40,000 --> 00:00:44,000
the connection actually goes a lot deeper. So, why a cracker and cheese board?

12
00:00:44,000 --> 00:00:48,000
When we're talking about food, it all comes down to water.

13
00:00:48,000 --> 00:00:52,000

Corn, soy, alfalfa, it all needs water too grow,

14
00:00:52,000 --> 00:00:56,000
whether it’s being fed to humans or dairy cows. So when farmers

15
00:00:56,000 --> 00:01:00,000
are better prepared for a water shortage in advance, they can make more sustainable

16
00:01:00,000 --> 00:01:04,000
decisions, like what crops to grow, how to irrigate them,

17
00:01:04,000 --> 00:01:08,000
and where and what to feed their livestock. So here to help explain the connection between

18
00:01:08,000 --> 00:01:12,000
space and plate is Matt Rodell, NASA hydrospheric scientist.

19
00:01:12,000 --> 00:01:16,000
Hey Matt, how’s it going?

20
00:01:16,000 --> 00:01:20,000
Matt: Hey Kathleen, how are you? Thanks for having me.
Kathleen: Good, thanks for being here. So while I attempt to cube some cheese, can you tell

21
00:01:20,000 --> 00:01:24,000
me what NASA has to do with irrigation for agriculture?

22
00:01:24,000 --> 00:01:28,000
Matt: Absolutely. So, agriculture requires a nice, wet

23
00:01:28,000 --> 00:01:32,000
soil for growing crops. In order to know how well the crops

24
00:01:32,000 --> 00:01:36,000
are gonna grow, the farmers need to have a better idea of how much water there is in

25
00:01:36,000 --> 00:01:40,000
the soil, and so we’ve been coming up with better ways for monitoring

26
00:01:40,000 --> 00:01:44,000
soil wetness from space. One of the ways we do this is

27
00:01:44,000 --> 00:01:48,000
we use a NASA satellite called SMAP, which is an acronym,

28
00:01:48,000 --> 00:01:52,000
and SMAP actually measures the wetness in the top of the soil

29
00:01:52,000 --> 00:01:56,000
worldwide, every day. And this information is vital

30
00:01:56,000 --> 00:02:00,000
for understanding how much water is available for the plants, how much water is

31
00:02:00,000 --> 00:02:04,000
needed for irrigating the crops, and so it’s useful for farmers

32
00:02:04,000 --> 00:02:08,000
and land managers and others. It’s also useful for monitoring

33
00:02:08,000 --> 00:02:12,000
drought. Another mission that NASA has is called GRACE,

34
00:02:12,000 --> 00:02:16,000
which is another acronym, and GRACE is really incredible, because it

35
00:02:16,000 --> 00:02:20,000
uses measurements of Earth’s gravity field to understand

36
00:02:20,000 --> 00:02:24,000
the amount of water on and in the land surface.

37
00:02:24,000 --> 00:02:28,000
So we can even measure things like the amount of water in the

38

00:02:28,000 --> 00:02:32,000
underground aquifers, deep underground. This is vitally important,

39
00:02:32,000 --> 00:02:36,000
because groundwater is one of the main sources of water for agriculture.

40
00:02:36,000 --> 00:02:40,000
It’s also a source of water for people who have wells in their backyard, like I do,

41
00:02:40,000 --> 00:02:44,000
so when I turn the faucet on, that’s groundwater coming out. And in fact,

42
00:02:44,000 --> 00:02:48,000
about half the produce that we eat we have groundwater

43
00:02:48,000 --> 00:02:52,000
to thank for that. Because it’s used for that much irrigation. This includes things like

44
00:02:52,000 --> 00:02:56,000
the wheat in your crackers, soy, fruits and vegetables

45
00:02:56,000 --> 00:03:00,000
on your platter, etc. So all these things

46
00:03:00,000 --> 00:03:04,000
NASA’s doing are really contributing to our understanding of the water

47
00:03:04,000 --> 00:03:08,000
availability that’s critical for irrigating all these crops.

48
00:03:08,000 --> 00:03:12,000
Kathleen: Interesting…and a good reminder that this cheese board needs dressing up. So I have

49
00:03:12,000 --> 00:03:16,000
edamame in front of me, and what I believe to be the most underrated part of a cheese board,

50
00:03:16,000 --> 00:03:20,000
which are carrots and olives.

51
00:03:20,000 --> 00:03:24,000
Matt: Yeah, those are pretty water-intensive crops, and they’re grown in the Central Valley,

52
00:03:24,000 --> 00:03:28,000
which is some place where proper water management is really critical.

53
00:03:28,000 --> 00:03:32,000
I see you have some grapes there, too. Speaking of grapes, NASA has an ongoing

54
00:03:32,000 --> 00:03:36,000
project with the US Department of Agriculture and vintners

55
00:03:36,000 --> 00:03:40,000
in California called GRAPEX, where we’re using data from Landsat

56
00:03:40,000 --> 00:03:44,000
satellite, along with multiple other space and ground-

57
00:03:44,000 --> 00:03:48,000
based observation sources, and advanced computer models, to help

58
00:03:48,000 --> 00:03:52,000
to schedule irrigation for these vineyards, and therefore, preserve

59
00:03:52,000 --> 00:03:56,000
the precious resource: water. It’s really precious in California,

60
00:03:56,000 --> 00:04:00,000
where there’s an ongoing drought right now, as well as most of the American West.

61
00:04:00,000 --> 00:04:04,000
We use data from multiple satellites

62
00:04:04,000 --> 00:04:08,000
to monitor drought. This helps the end-users like the farmers and the ranchers

63

00:04:08,000 --> 00:04:12,000
and others that are interested in agriculture to better

64
00:04:12,000 --> 00:04:16,000
prepare for drought, and to better plan how to mitigate

65
00:04:16,000 --> 00:04:20,000
the effects of drought. Drought's gonna become even more important in the future

66
00:04:20,000 --> 00:04:24,000
we believe, with climate change. It's likely that in some parts of the world,

67
00:04:24,000 --> 00:04:28,000
droughts are going to become more frequent and more intense,

68
00:04:28,000 --> 00:04:32,000
and it's possible that the dry parts of the world will get drier,

69
00:04:32,000 --> 00:04:36,000
wet parts of the world will get wetter. That's where NASA comes in. So we're helping with

70
00:04:36,000 --> 00:04:40,000
not only the current monitoring drought, but the forecasting

71
00:04:40,000 --> 00:04:44,000
of near-current drought, and then predictions

72
00:04:44,000 --> 00:04:48,000
of how climate is gonna change in the future, and how it's going to affect our water resources.

73
00:04:48,000 --> 00:04:52,000
Kathleen: Well, Matt, it looks like my cheese board's done. What do you think?

74
00:04:52,000 --> 00:04:56,000
Matt: I think it looks delicious, and I can't wait to go start my own lunch.

75
00:04:56,000 --> 00:05:00,000
Thanks so much for having me, Kathleen!

Kathleen: Thank you for joining me! And thank you everyone for watching;

76
00:05:00,000 --> 00:05:04,000
I hope you learned a lot, I know I did. And I hope this episode

77
00:05:04,000 --> 00:05:07,000
wasn’t too cheesy for you.