

## **High Country hi-tech Video Answers**

**Tuesday 12 May**

### **1. Drones and their uses**

Come down to the shores of Lake Pukaki to fly a drone and find out more about their uses.

1. What does Marcus use this drone for?
  - Monitoring the spread of weeds in the high country
2. How does the drone work?
  - It is battery powered and needs to lock into four satellites so the GPS works, it is controlled via a remote control unit
3. What are some of the benefits and challenges of using a drone?
  - It is cheaper and safer than using a helicopter, it can fly very low, it is affected by weather – this one can't be used in the rain and high winds make it difficult to use

Next step learning: Find out about some other uses of drones in New Zealand.

### **2. Drones monitoring wilding pines**

Drive towards Tekapo to find some wilding pines and see how drones are used to help control this invasive weed.

1. How is the drone used to help control wilding pines?
  - It can monitor the spread of wilding pines by locating them using GPS and recording images and footage to identify the species, density of trees and size of trees, whether they are seeding.. so the best form of control can then be planned and carried out
2. Why are wilding trees a problem?
  - They grow on farm land and reduce the amount of land available to farm, they spread easily and out compete other species and reduce the amount of moisture in the soil
3. How might drones be used in the future to control wilding pines?
  - They may be able to carry herbicide and image recognition software that allows them to accurately identify weeds and then spray them to kill them.

Next step learning: Design your own drone for a particular use in the high country.

### **3. What is GPS?**

Drive up to the top of Mount John to learn about GPS and how it has changed the way we locate things in New Zealand.

1. What does GPS stand for?
  - Global Positioning System
2. How many satellites are needed to get an accurate location?
  - At least 4
3. What information does GPS give and what stations make up the New Zealand survey network?

- GPS gives co-ordinates in latitude and longitude and 30 continuous GPS stations make up the national Geodetic network

Next step learning: Find out the exact location of your home using GPS.

#### **4. GPS in New Zealand**

Take shelter inside to find out more about GPS use in New Zealand and how it has changed the way we find locations

1. When did GPS data replace the old survey data used to make maps and how is it different to what was used in the past
  - In 2009 the new Topo50 map series came out that was based on GPS data which gives co-ordinates in the same way throughout the world, but is about 200m different to the old way of calculating co-ordinates
2. Why did New Zealand start using GPS?
  - To gain better accuracy and to be consistent with the rest of the world
3. What are some things that GPS can be used for?
  - Finding your exact location and measuring things such as the height of Aoraki/Mount Cook after a rock slide and measuring tectonic plate movement

Next step learning: Find out how GPS can be used to better prepare for natural hazards.

#### **5. Let's start geocaching**

Meet students from Twizel Area School to see how you can get involved in geocaching

1. What is geocaching?
  - An activity where you can register online to find out where geocaches are located in your local area, you then get GPS co-ordinates and clues to help you find the cache
2. What are some of the challenges of geocaching?
  - Finding out the best way to get to a geocache when line of sight is shown which does not take into account buildings or obstacles, or which roads or tracks to take
3. What do you need to be aware of when trying to find a geocache?
  - How to stay safe in the environment and whether you have permission to be there

Next step learning: Go to the [Geocaching website](http://www.geocaching.com) to find geocaches in your local area.