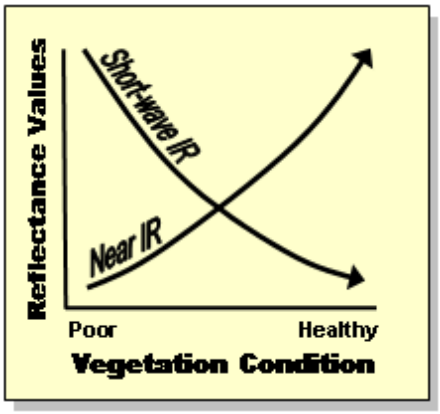
0.What is a BARC?

A Burned Area Reflectance Classification (BARC) is a satellite-derived map of post-fire vegetation condition. The BARC has four classes: high, moderate, low, and unburned. This map product is used as an input to the burn severity map produced by the Burned Area Emergency Response (BAER) teams.

How are BARC maps generated?

BARC maps are made by comparing satellite near and mid infrared reflectance values. The logic behind the process is as follows:



- Near infrared light is largely reflected by healthy green vegetation. That means that near infrared bands will be very high in areas of healthy green vegetation and low in areas where there is little vegetation.
- Mid infrared light is largely reflected by rock and bare soil. That means that mid infrared band values will be very high in bare, rocky areas with little vegetation and low in areas of healthy green vegetation.
- Imagery collected over a forest in a pre-fire condition will have very high near infrared band values and very low mid infrared band values. Imagery collected over a forest after a fire will have very low near infrared band values and very high mid infrared band values.

It is the relationship between these two bands that BARC mapping attempts to exploit. The best way to do this is to measure the relationship between these bands prior to the fire and then again post fire. The areas where the relationship between the two bands has changed the most are most likely to be severely burned. The areas where that relationship has changed little are likely to be unburned or very lightly burned. To determine this relationship, analysts perform a band ratio between the mid and near infrared bands. The result is a classification of burned areas.

How should BARC data be used?

In the immediate aftermath of a wildfire, an Emergency Stabilization & Rehabilitation (ES&R) team -- also known as a Burned Area Emergency Response (BAER) team -- is dispatched to the site to prepare an emergency rehabilitation and restoration plan. They do this by making an initial assessment of burn severity and to estimate the likely future downstream impacts due to flooding, landslides, and soil erosion. One of the first tasks for this team is the creation of a burn severity map that highlights the areas of high, moderate, and low burn severity. This map then serves as a key component in the subsequent flood modeling and Geographic Information System (GIS) analysis. The BARC data are meant to be used as a main input into the development of the final burn severity map.