



# Friends of Penzance B.S.A.C. Conservation Officer's Report February 2015

Distributed throughout the world's oceans, the Cuvier's Beaked Whales' frequent dives deep into the ocean make them difficult for researchers to study. Previous studies using short term tags have indicated that this deep-diving species might be the most extreme breath-holder diver in the ocean. To better understand this behaviour, scientists analysed data from satellite linked tags that recorded the diving behaviour and locations of 8 Cuvier's beaked whales off the southern Californian coast. They collected over 3,700 hours of diving data, including depth and time of each dive. They recorded 1100 deep dives averaging 0.87 miles deep and 5600 shallow dives averaging about 0.17 miles deep. The deepest dive recorded was one that reached nearly 2 miles below the ocean surface, and the longest lasted 137 minutes. The dives captured on this study not only exceed the previous Cuvier's beaked whale diving records of -1 mile deep and 95 minutes, - but also the current mammalian dive record previously set by the Southern Elephant seal at 1.5 miles deep and 120 minutes.. One striking difference compared to other divers is that deep-diving elephant seals and sperm whales require an extended recovery period after long deep dives, whereas Cuvier's beaked whales average less than 2 minutes at the surface between dives.



Cuvier's Beaked Whale

Most deep sea volcanoes produce effusive lava flows rather than explosive eruptions, because the levels of magmatic gas tend to be low, and because the volcanoes are under a lot of pressure from the surrounding water. but by using an ion microprobe, researchers have now proved that explosive eruptions can also occur.



This image shows bands of glowing magma from submarine volcano

Between 75 and 80 per cent of all volcanic activity on Earth takes place at deep-sea, mid ocean ridges. This magmatic gas which fuel the explosions are made up of a variety of components, including, most importantly CO<sub>2</sub>. Over the past 10 years geologists have speculated, based on the presence of volcanic ash in certain sites, that explosive eruptions do occur in deep-sea volcanoes. The work of the researchers also show that the release of CO<sub>2</sub> from the deep mantle to Earth's atmosphere, is much higher than had previously been imagined. Given that mid-ocean ridges constitute the largest volcanic system on Earth, this discovery has important implications for the global carbon cycle which has yet to be explored.

A new NASA-led study shows that tropical forests may be absorbing far more carbon dioxide than many scientists thought, in response to rising atmospheric levels of the greenhouse gas. The study estimates that tropical forests absorbs 1.4 billion metric tons of carbon dioxide out of the total global absorption of 2.5 billion more than is absorbed by forests in Canada, Siberia and other northern regions, called boreal forests. This is good news, because uptake in boreal forests is already slowing, while tropical forests may continue to take up carbon for many years. Forests and other land vegetation currently remove up to 30% of human carbon dioxide emissions from the atmosphere during photosynthesis. If the rate of absorption were to slow down, the rate of global warming would speed up in return.



Tropical Forest

There were very few marine sightings during January, A pod of 10 Common Dolphins off Gwitherian on the 4th, Three Harbour Porpoises off Gwennap Head on the 6th, A Grey Seal close in under St Agnes Head on the 11th, Seven Harbour Porpoises, including 2 juveniles, off Gwennap Head on the 18th and a lone Bottle-nose Dolphin being very friendly with a diver off Pendennis Point on the 27th. It seemed to like being inverted in front of the diver, and it had lots of scars along both sides of its body. There was also a large notch out of its dorsal and it had a large black spot underneath its jaw, so easily recognised.