

# There is more than one way to hug a tree

The term “tree-hugger” is often used in a deprecatory sense by those of a less liberal disposition to describe members of society who have the interests of the environment at heart, but whose views may appear not to be in the mainstream, in much the same way as “hippies” were pigeonholed in the 1960s and '70s.

The name was in use in 1960s America as a derogatory term for environmental activists but it became better known as a result of the Chipko movement.

This campaign originated deep in the Himalayan mountains of Uttar Pradesh in 1974, when the women of Reni village engaged in non-violent protest in order to protect the forests upon which their livelihood depended, saying they would hug the trees to protect them from the axe.

Their movement was thrust into the media spotlight because, at that time, there were hardly any environmental movements in the developing world and the almost Gandhian philosophy of the women's protest captured the imagination of the West.



Tree-hugging has also found its way into the realms of complementary therapies. Advocates of tree-hugging suggest that trees

can be healing and “giving”, and when participants are tuned in through breathing exercises and meditation, the tree's healing energy can be drawn up from the earth. This, apparently, is a wonderful way of clearing any pieces of debris that may be hanging around our auras.

There is more than one way to hug a tree, such as the vertical tree hug, the full body tree hug, and the more risky up-in-the-air tree hug, which involves climbing into the upper branches of the tree.

In a recent interview, the publisher and poet Felix Dennis pointed out that without trees humans would not have evolved. No trees means no fire and no fire means no metal, no warmth and no ability to render food palatable. Without trees, there would be insufficient oxygen, humans would not have developed hands from years spent living in their branches, and the world would be a less beautiful place.

This, more than any other, may be the best reason to hug a tree and, while looking around for passers-by, whisper a grateful “thank you”.

## Electricity and dune formation

When high winds sweep across the surface of the desert they carry along grains of sand, causing them to bounce against each other and the ground, in a process known as saltation (from the Latin for “leap”). It is this force that forms sand dunes, sculpts rocks and causes erosion. The bouncing motion of the particles on the surface kicks dust particles into the air as aerosols. However, it has been suspected that electricity may play a role in the process of saltation, because experiments some years ago on dust storms in the Arizona desert had revealed the presence of an electrical field.

Now, by taking the wind and electricity into account, researchers at the University of Michigan have developed a new model that matches actual measurements of saltation better than the decades-old classical theory ([www.sciencedaily.com](http://www.sciencedaily.com)).

As the sand particles bounce and rub against each other, a static electrical charge is generated, with the particles picking up electrons and developing a negative charge, and the ground becoming positively charged. The separation of charges creates a field of static electricity that can reach strengths of 200,000 volts per metre at a centimetre from the surface. This field in turn draws more sand up into the air because the positively charged ground particles are attracted to the floating negative ones. The field can be strong enough to double the concentration of bouncing sand particles compared with previous assumptions.

This electrical phenomenon may also explain a puzzling feature of Mars. High amounts of oxygen are released when the planet's sand is mixed with water, and it was once thought that this oxygen may be a sign of life on the Red Planet. But it has now been suggested that the saltation electric fields on Mars get so large that water vapour is broken down to produce hydrogen peroxide, which then breaks down to release oxygen.

The above discoveries could be important for the study of climate science because they help scientists understand how aerosols are released. Dust is but one type of aerosol; burning fossil fuel releases another type, and they are known to affect climate by blocking and absorbing sunlight, as well as seeding clouds.

## Sweden's double leap year

As we move into spring 2008, the four-yearly occurrence of 29 February slips into memory, complete with the quirks and rituals associated with it, such as leap year babies, the origins of women asking for the man's hand in marriage, and the apparent absence of the rule of law on leap year day during medieval times.

In 1999, a rumour, powered by the internet, was propagated to the effect that the year 2000 was to be a double leap year, with a 29th and 30th day added to February. What few people realised, however, was that there had already been a double leap year, in Sweden, in 1712.

The Julian calendar, introduced by Julius Caesar in 45BC, was in common use until the 1500s. A major drawback of the calendar was that it introduced an error of one day every 128 years, meaning that every 128 years the tropical year shifts one day backwards with respect to the calendar. In February 1582, a papal bill announced the adoption of the Gregorian calendar, and decreed that 10 days should be dropped from October 1582. This was observed immediately in Italy, Poland, Portugal and Spain. Other Catholic countries followed shortly afterwards, but Protestant countries were reluctant to change.

By 1700, when Sweden decided to adopt the Gregorian calendar, the number of days to be dropped had increased to 11. But instead of losing all the extra days at once, like the rest of Europe, Sweden chose to continue with its calendar as normal, omitting the leap days. By dropping every 29 February between 1700 and 1740, it would slowly convert to the Gregorian calendar, although it would be out of step with both Julian and Gregorian dates during the 40-year changeover. Unfortunately, the plan ran into problems when 1704 and 1708 were mistakenly made leap years, and Sweden decided to revert to the Julian calendar. To accomplish this, 1712 was given two leap days — 29 February as the regular leap day for that year and 30 February to replace the leap day omitted in 1700. Later, in 1752, Sweden finally adopted the Gregorian calendar, dropping all 11 days at once.

Sweden was not the last European country to adopt the Gregorian calendar. Russian Orthodox and Greek Orthodox countries resisted it until the 20th century. Russia's change followed its 1917 October revolution and Greece finally fell into line in 1923.