

## Saturday

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before we didn't need it before Christmas so nobody cared much. Now we have these championships, everyone is expecting it. The last two winters were colder than usual. We had 8.7m of snow here at Hochfilzen and the snow came early. This season though, it's really different. We're not used to wearing T-shirts in December. The whole of November was so warm."

Skiers often dismiss reports of bare mountainsides and diminishing ski trails as a harbinger of global warming, especially early in the season. And with snow forecast for this weekend across the Alps, the tourism industry is hoping that the gloomy news stories will soon be buried in feet of the white stuff. In the French resort of Chamonix, the météo was promising 20cm of snow above 1,800m, while at nearby Val d'Isère, forecasts of colder temperatures could allow artificial snow-making to begin.

But Trixl is quick to observe that while snowfall can be difficult to predict, what is happening in Austria and across the Alps is evidence of climate change. "If you go up to the Grossglockner and see the glaciers, you have to believe it. They're disappearing. We expect the skiing season will be shorter in the future, perhaps only January and February."

Climatologists lined up this week with imposing statistics on just how warm it's getting up there. Reinhard Böhm at Austria's Central Institute for Meteorology and Geodynamics warned that the Alps is experiencing its warmest period for 1,300 years. The Italian Meteorological Association said that so far this has been the warmest winter since records began 200 years ago. All of this spells disaster for Europe's glaciers.

Between 1985 and 2000, the Alps lost



Andrea Henkel, from Germany, in the women's 7.5km sprint of the Biathlon World Cup which she won yesterday

22% of their glacial surface area, with those in relatively lower-lying Austria most vulnerable of all. In the ferociously hot summer of 2003, between 5% and 10% of the remaining ice melted. Leading glaciologist Michael Kemp has warned that with a 3C rise in summer air temperatures the Alps could lose 80% of the remaining glaciers.

Rising temperatures and the loss of ice have sinister consequences, especially if you're a hiker or mountaineer. In recent years, locals living below the Eiger in Switzerland have watched the Lower Grindelwald Glacier retreating up the mountain month by month. The presence of ice had locked huge areas of unstable rock onto the lower slopes of the Eiger, but with its disappearance whole cliff-faces have started collapsing. In July, a 70-year-old German tourist was killed by a giant mudslide that poured off a retreating glacier in the Corvatsch region of Switzerland. And at the end of May, a rock fell from the entrance of the Gotthard tunnel, killing two Germans in their car. The tunnel was closed for a month.

Switzerland's most famous tourist icon, the Matterhorn, has also proved increasingly unstable. On 14 July 2003, mountain guide Victor Saunders found himself stranded on the mountain's popular Hörnli Ridge with his client Craig Higgins when a large area of rock called the Third Tower collapsed. Both men were airlifted off the mountain. Air Zermatt reported it rescued 70 climbers that day. The mountain was for a short time off-limits as mountain guides made the area safer.

"Mountains are always changing," Saunders says, "entropy is in their nature. They want to be horizontal. You have to allow for that in judging what's happening in the mountains with regard to global warming. But there's no doubt that climate change is making it worse."

Saunders says as the permafrost level that locks mountains solid rises, previously frozen rock faces start shedding loose rock. The changing permafrost level, what Saunders calls a "zone of instability", means rocks fall in places that were once safe, sometimes with fatal consequences.

"Things which were nice to climb in August now have to be done in June or earlier," he says. "The first ice field on the Eiger is just rubble, and I would sooner be on that route in winter... people will have to factor these changes into their plans."

How the melting of the Alps affects

## View from the top

Mountaineers may not consider themselves to be canaries, but the photographs they have brought back from the world's high places in the last century have warned just how fast the world's mountain glaciers are retreating as the planet warms. Sir Chris Bonington (below) climbed Everest in 1985 when the summit ridge was still a snow climb. "Now people tell me that there are patches of rock and scree, making it more difficult."

Climbing Kilimanjaro for the second time recently, he was stunned by the difference from his first ascent in 1992. "There was a reasonable covering then," he says, "but the difference now is dramatic." But it's on his local Cumbrian fells where the change is most keenly felt. "In the 1980s you could be sure of two or three weeks of snowy conditions. One of my happiest memories is of skitouring in the northern Pennines. It's laughable to imagine doing that now."

Stephen Venables, president of the Alpine Club and the first Briton to climb Everest without oxygen in 1988, has also seen rapid disappearance of ice from the



tropics, in Uganda. "When I went to the Rwenzori in the 1980s the snow cover was pretty much the same as it was in the 1950s. The recent photos I've seen show they've changed out of all recognition."

For Venables (above), the world's high mountains are the "ultimate laboratory in which to study climate change. In the span of my own alpine climbing career, just 30 years, I've seen the great ice faces we all aspired to climb simply disappear." ED

tourism has politicians and businessmen riveted. Professor Hans Elsasser, an economic geographer at Zurich University, has made a study of how winter sports could be affected if the climatologists have got it right. "So far we haven't yet seen a big change in the tourism industry, but there has been a clear impact on natural snow cover in winter. Generally speaking, in lower regions in recent years, the early season has not had snow. In the future, destinations at higher altitudes will become more popular and more expensive."

Elsasser says that in the past 15 years, the skiing industry has become more capital intensive. Poor snow fall in the late 1980s prompted investment in artificial snow-making. But the combination of high costs and rising temperatures makes that less attractive now. For 1km of piste, he says, it costs €600,000 of investment in machinery, and a further €25,000 each year in energy and water costs. That means higher lift-pass costs.

"Artificial snow is a solution for the next five or perhaps 10 years," he says, "but it's not a long-term solution. Today, as we speak, the weather is too warm and no one can make snow." Since artificial snow requires temperatures of -4°C, higher resorts will attract more skiers and Elsasser predicts that these more fragile environments could face

further degradation. Worse, melting permafrost is already damaging installations such as chair lifts and cable cars and extreme weather events, including, ironically, heavy falls of snow like that in 1999, could cause more damage. More than 40 facilities were damaged by avalanches that year, at a cost to the industry of €9m.

"In Alpine regions, tourism is the



the guardian reader offer

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## Greener than thou ... Will Duguid

## How do you have an ethical midlife crisis?

God knows what's brought it on. Gordon Brown, probably, with his abysmally unethical budget. Though it doesn't help that the chickens aren't laying, Christmas is coming, and the kids have already trashed the sustainable festive sapling. Whatever: I've been feeling restless all week. Discontented. Had days when all I wanted to do was lift weights, read Cormac McCarthy, and dream.

It wasn't the first time Rowan had diagnosed a midlife crisis, but this time, I figured she was probably right. Ethical or not, it was time to buy that donkey. Or if we couldn't finesse the methane problem, a scooter. It might not sound like much, but when I tell you that Rowan wanted to fill the new, vehicle-shaped gap in my life with a rickshaw, perhaps you'll understand the challenges facing a planet-friendly guy who wants to confront his own mortality without insulting the environment.

For your average, unethical petrol-head, it's simple. You join a gym, blow your savings on a Harley, pin down a fellow sufferer and roar off down Route 66 on a wine-tasting trip. Crisis sorted.

But what does an ethical midlife crisis look like? There must be some form of male breakdown that doesn't involve a gym (out of the question), adultery (ditto) and the internal combustion engine. I'd ask George Monbiot if I didn't already know that a truly altruistic person wouldn't ever tire of folding cardboard and inventing sustainable transport systems.

Is it unethical to even dream of one day when you don't visit the compost heap? When I started on this journey, I never imagined a time when I'd start fantasising about check-in desks.

Is there a form of male crisis not involving the gym ... or the internal combustion engine?



ILLUSTRATION: PAUL BOMMER

So, the scooter arrives, and right away, I wish I'd gone for the donkey. Along with a nice red trap. I know allotments where it would have drawn envious looks. The low-energy crisis solution had to be shared transport; maybe a sea voyage, under sail, which would, inevitably, take me far away from the recycling bins, to places where the dusky-skinned female inhabitants have never met a committed environmentalist. Along the way, I could audit plastic detritus levels in the South Pacific.

I was in the bedroom, packing, when a key turned in the lock. Rowan, it turned out, had organised a kind of alternative midlife crisis for me, in bed, which would waste no energy whatsoever. And the good news? She was right. I'm not just over it; I've had a truly life-changing experience.

Just by lying in bed, I've calculated, I've reduced my carbon footprint by 97%! So if Gordon Brown is serious about implementing Stern, the overnight solution to greenhouse gas salvation is staring him in the face. It's this simple: every day, half the country doesn't get up! And, get this - the ones who do, have to get around by sailing boat, round the coast, or via the rivers and canal systems. Meanwhile disposable nappies would be banned by a new Planet Tsar, with the powers to imprison, or exile - is hanging too strong? - anyone caught buying a whole slew of prohibited products, from 4x4s to non-flushable hygienic wipes. And if China failed to comply the hell with it, we'd just go in there.

Yes, once you stand back, the route to global salvation is so obvious that if Gordon Brown doesn't adopt all of my proposals, immediately, he needs his head examined. Sustainably, of course.

Mountains are always changing. Entropy is in their nature. But climate change makes it worse

most important industry," he says. "The winter season is, from the economic point of view, more important than the summer. People spend more money in winter."

Studies suggest Switzerland could lose as much as €1.2bn from its tourist industry, figures which leave the Swiss tourist industry frothing with indignation. "Tourism representatives think that climatic change is highly exaggerated by not only the media but also by science and politics," Elsasser says.

At least the Swiss can bank on their comparatively higher resorts for longer. The impact on Austrian and German winter sports at lower altitudes could be far worse. In Hochfilzen, Trixl says that already her neighbours are looking for alternatives. "Winter sports are a big part of our livelihoods," she says, "but at least we have other industries like the pharmaceuticals factory. In other parts of the Tirol, around Innsbruck and the Zillertal, they exist only on tourism."

Climate change has, she says, made her and her colleagues more environmentally aware. "Driving home I see more and more of my neighbours putting up solar panels to heat their hot water. And we're champion recyclers here. I'm very keen on that." And Elsasser can see advantages for a warmer Alpine region. In a warmer future, he says, we'll have more heatwaves like the one that killed almost 15,000 people in 2003 in southern France. "For the elderly and the young the mountains will be much more pleasant," he says.

Biathlon, says Fowler, is contemplating a future without snow. British team secretary Mark Goodson says International Biathlon Union members are "going to have to get their heads together and think about this".

If things get really bad, the sport could even move to summer and use roller-skis.

Already, the Germans hold their national championships during the off-season. Alternatively, the future may lie in indoor skiing tunnels such as the new facility at Torsby in Sweden where Fowler trained this summer, chilled to a refreshing -5C. "But it's hardly the same," she says.