

A SKI AREA OPERATOR'S EXPERIENCE



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Introduction

CLIMATIC RISK EVALUATION

- A natural, entirely legitimate concern
- A controversial subject
- One of a number of essential questions

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1/ Which climatic risks?

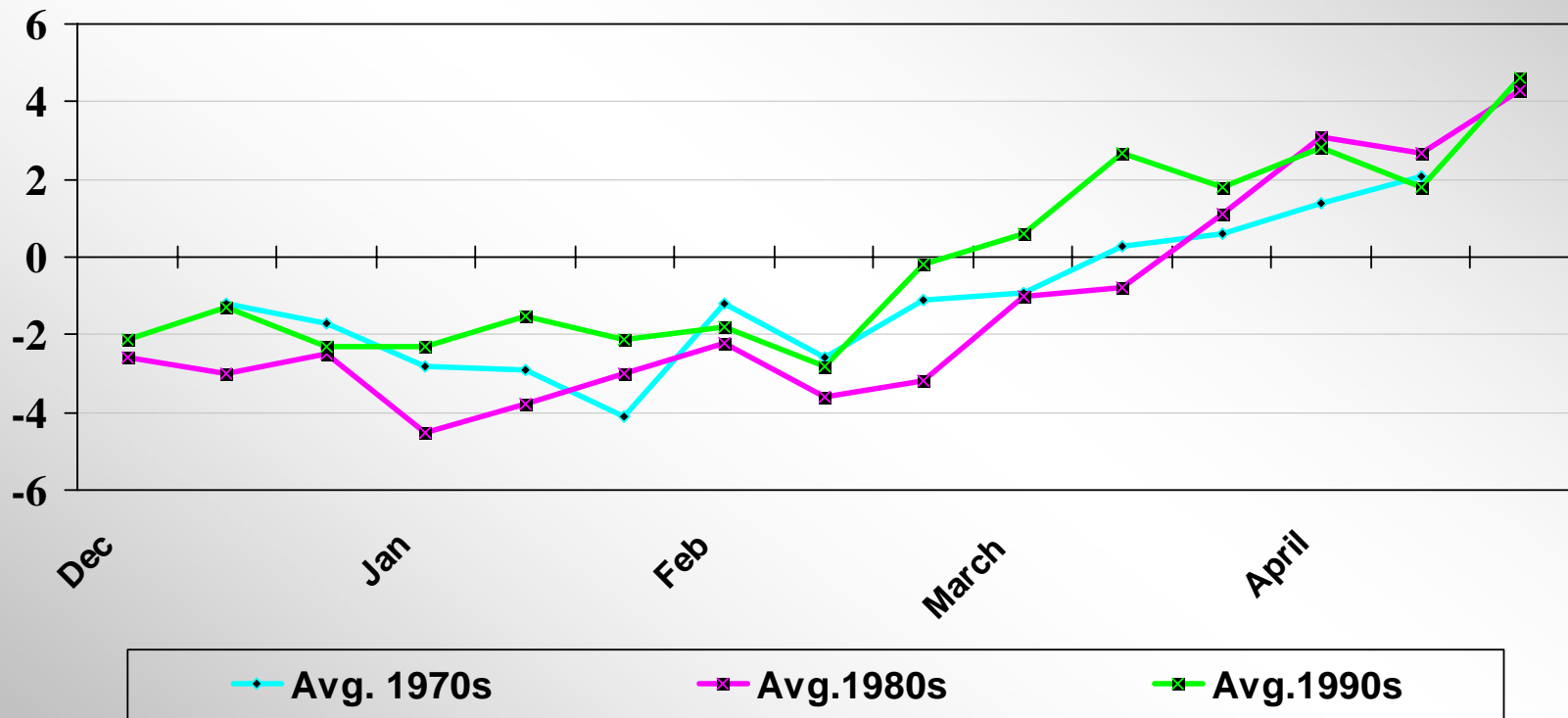
■ What are the climatic risks?

- Too much or too little snow (short term)
- Global warming (long term)

■ What have we observed?

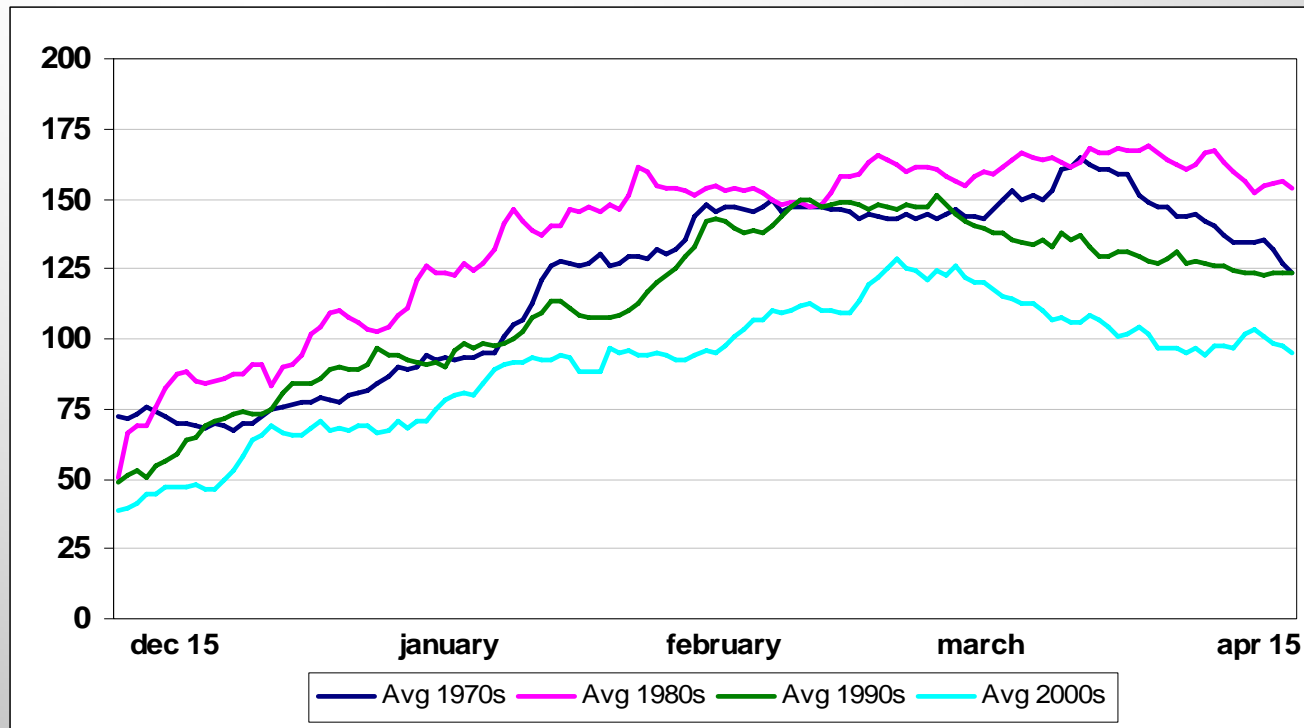
- Climate is changing: the 1990s was the warmest decade of the century,
- Snowfall curves are at a much lower level than in the 1970s and '80s.

Average temperatures at La Plagne (in degrees Celsius)



Depth of snow cover at La Plagne (in cm.)

Snow cover of the 2000s : -20% vs 1990s ; - 35% vs 1980s



Changes in climate and snow cover

(Sources: Centre Etudes de la Neige, Crocus and Safran models)

IMPACT OF A 1.8° CELSIUS INCREASE IN TEMPERATURE

on the winter seasons between 2030 and 2050

■ At an altitude of 1,500 meters

→ Snow falls later and begins to melt earlier

→ Period of winter snow cover drops by 20 to 50%, depending on the mountain range:

• <i>Northern Alps</i>	<i>170 days</i>	⇒	<i>135 days</i>
• <i>Southern Alps</i>	<i>120 days</i>	⇒	<i>90 days</i>
• <i>Pyrenees</i>	<i>130days</i>	⇒	<i>70 days</i>

■ At an altitude of 2,100 - 2,400 meters

→ Warming has little noticeable effect on snow cover

2/ Climatic risks: steps to take

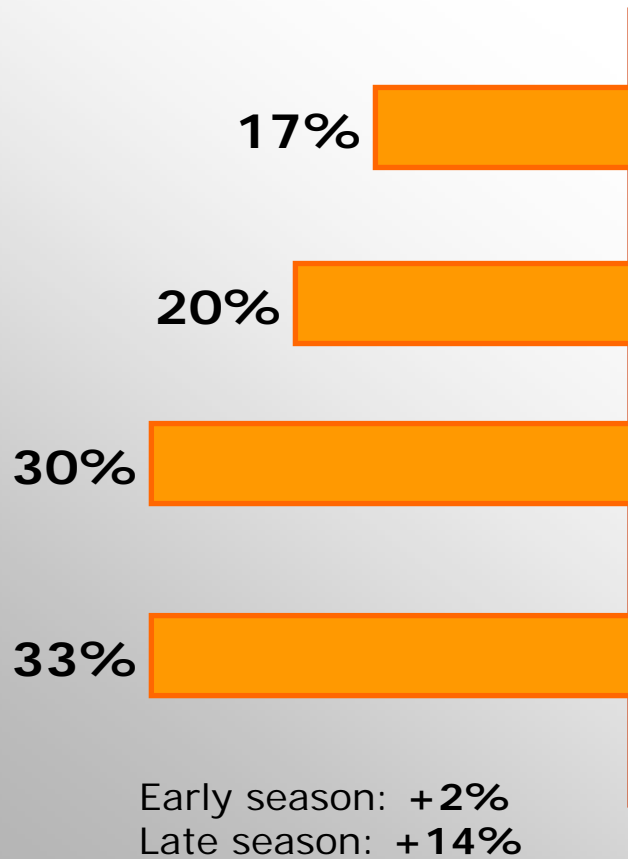
- a) Choose your sites well
- b) Prepare for the future
- c) Be insured

a) Choose your sites well

- **Characteristics of a good ski area:**
 - Altitude: as high as possible
 - Latitude: the furthest north possible
 - A continental site: as far away from oceans as possible
 - Exposure of the trails: northern
- **Type of resort: a major ski area linked to others**
- **An international client base**
- **Goals:**
 - Make the season last 20 weeks
 - Fill up even in slow periods
 - Vary visitor risks

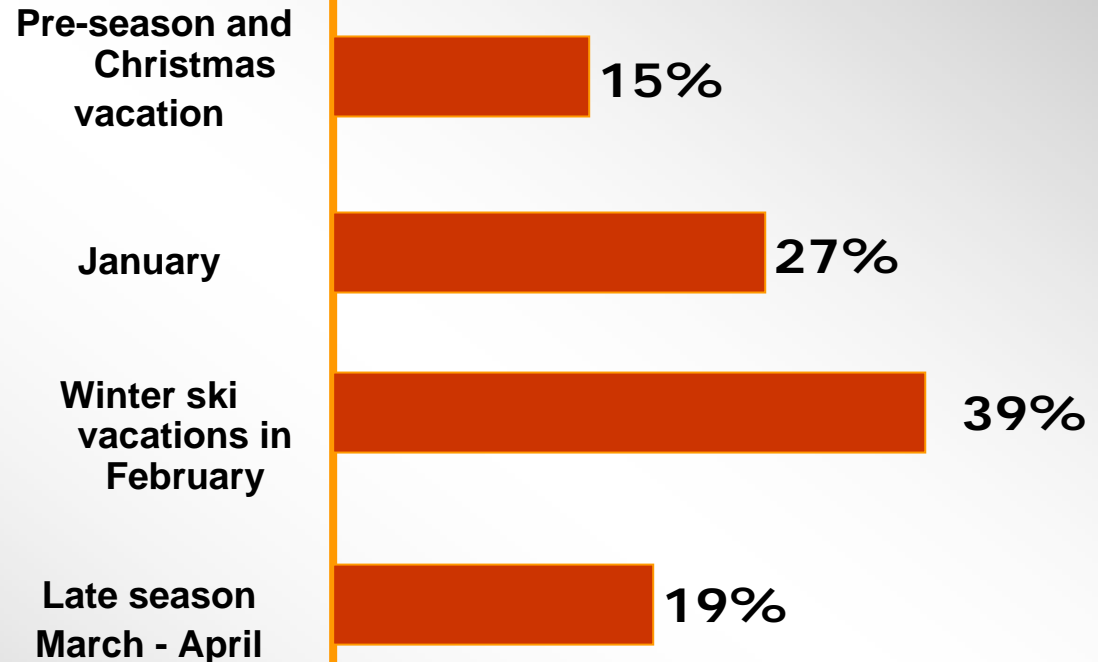
Breakdown of ski area receipts within a winter season

Seasonal profile - CDA

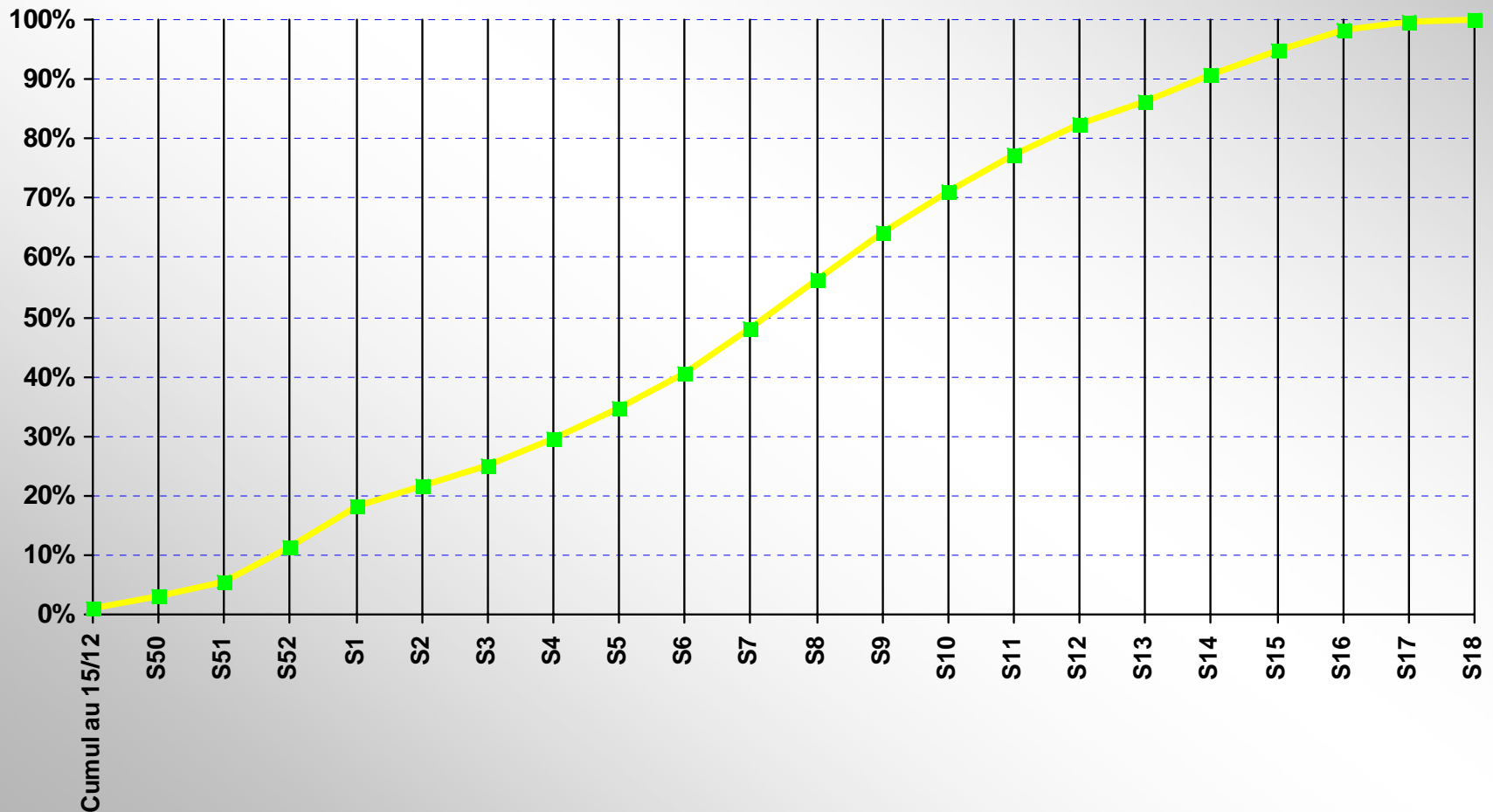


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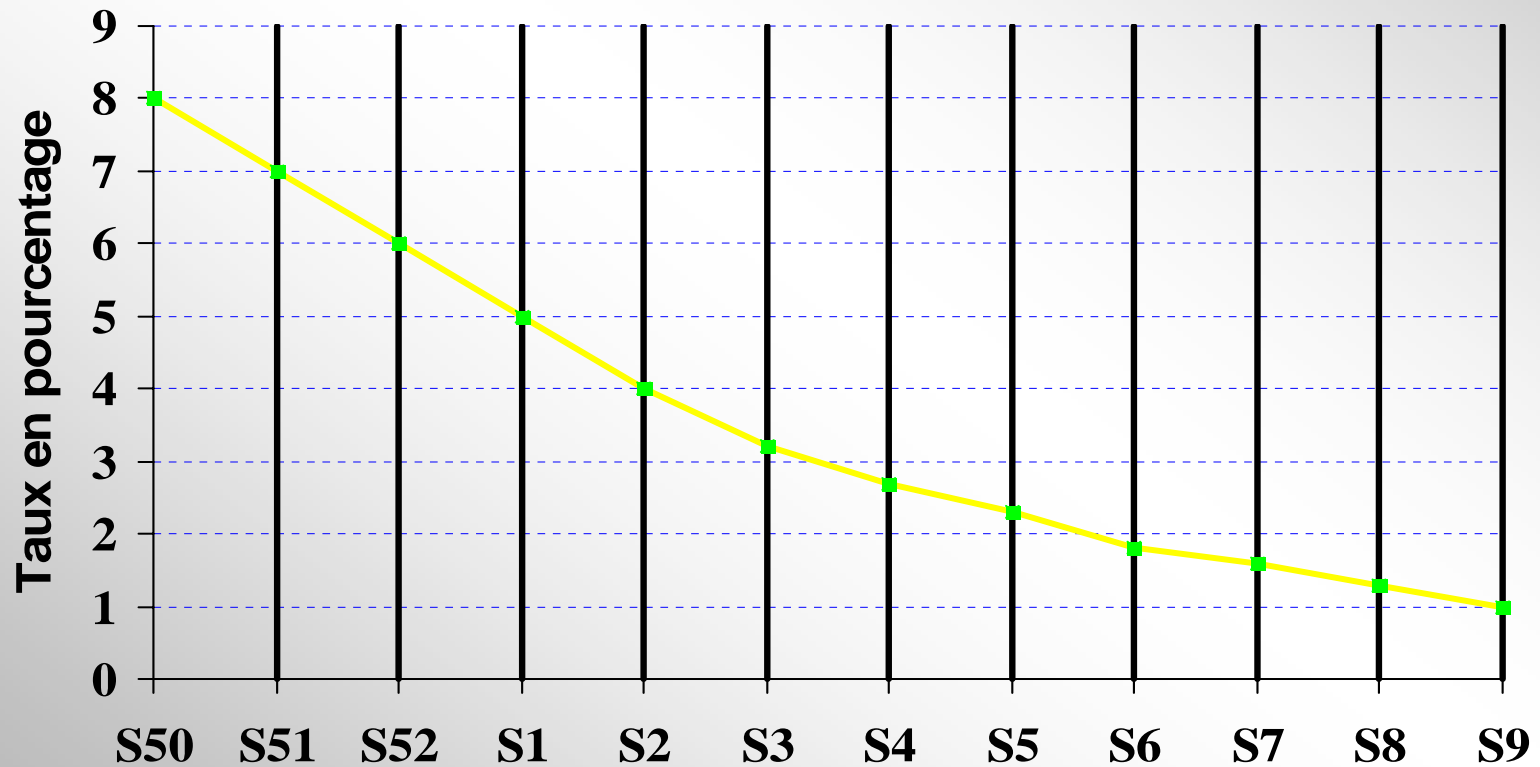
Seasonal profile - France



Cumulative CDA receipts in a ski season



Probability of lack of snow from season's beginning at high-altitude resort (about 1,800 m)



b) Risk prevention

- **Expenditures to prepare trails, to:**
 - Smooth out the terrain
 - Change exposure to the sun
 - Turf
- **Snowmaking covers about 25% of the surface of ski trails**
- **Trail maintenance: renew snow cover**
- **Protect the snow surface: preserve snow as much as possible**

Trail works



Trail works



Snowmaking



Snowmaking



Snowmaking



Daily maintenance



c) Insurance

- **Covering worst-case risks through derivative products: lack of snow as the season begins, snowstorms over school vacations: weather is covered, not climate**
- **Diversification of business activities in the off-season: leisure parks**

Conclusions

- **We'll be skiing in 2050!**
 - At altitudes above 2,000 meters
 - At large-scale resorts with the will and the means to invest
 - In better-adapted ski areas

- **Winter alternatives to skiing and snowboarding are not economically viable substitutes for resorts over 2,000 meters**

- **The summer season at high altitudes is not profitable for ski operators**

THE EXPERIENCE OF AN OPERATOR OF SKI AREAS



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