SELECTED SLIDES ONLY

WINE AND A CHANGING CLIMATE:

WILL THE TERROIR MODEL OF TODAY SURVIVE?

PRESENTED BY

ROGER C BOHMRICH MW

SOCIETY OF WINE EDUCATORS VIRTUAL CONFERENCE

AUGUST 14 , 2020

“Climate change is a wave you must ride or be swept away by.”

Dr. Elizabeth Wolkovich
University of British Columbia & Harvard University

Quoted in: Brooks, L, Climatologists Say Cabernet’s Days as King in Napa are Numbered, Wine Business Monthly, Jan 2019

WINE AND A CHANGING CLIMATE – *KEYWORDS*

CONCEPTS

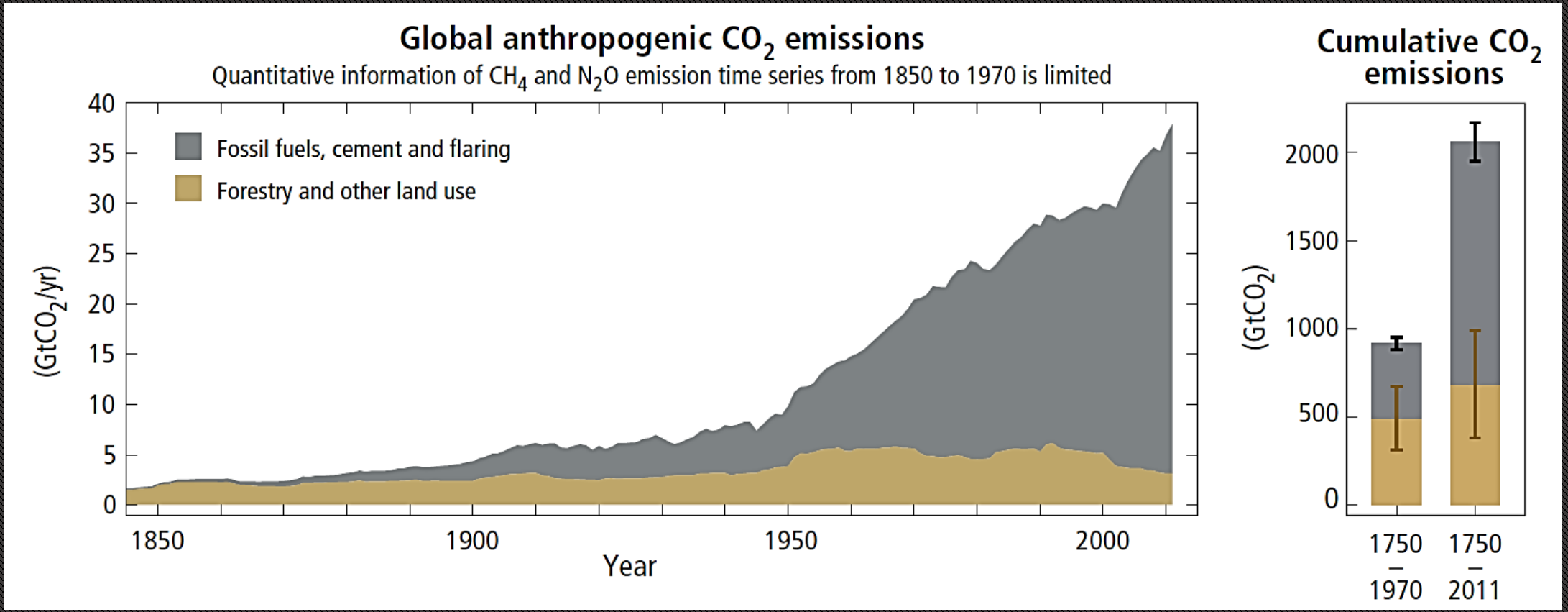
Anthropogenic
Global "weirding"
Bioclimatic index
GST
Climate/Maturity Grouping
Evapotranspiration
Asynchrony
Intraspecific diversity
High altitude
High latitude

PLACES & NAMES

Hautes-Côtes
Vallais
Lake County
New England Australia
Elqui
Calchaqui
La Quebrada de Humahuaca
Otronio
Chile Chico
Kojder
Hällåkra
Slinde

"Human influence on the climate system is clear, and recent anthropogenic emissions of greenhouse gases are the highest in history. Recent climate changes have had widespread impacts on human and natural systems."

IPCC, 2014



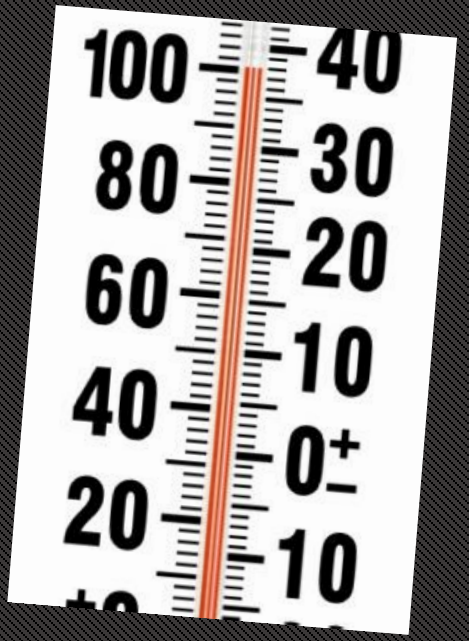
IPCC, *Climate Change 2014: Synthesis Report. Contribution of Working Groups I, II and III to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change* [Core Writing Team, R.K. Pachauri and L.A. Meyer (eds.)]. IPCC, Geneva, Switzerland, 151 pp.

A WARMING CLIMATE – *ITS IMPACT ON THE VINE*

"a 1° F [0.56° C] increase in average temperature would shorten the season from budbreak to harvest by between five and 15 days."

Gregory Jones

Director of Evenstad Center
Linfield College, Oregon



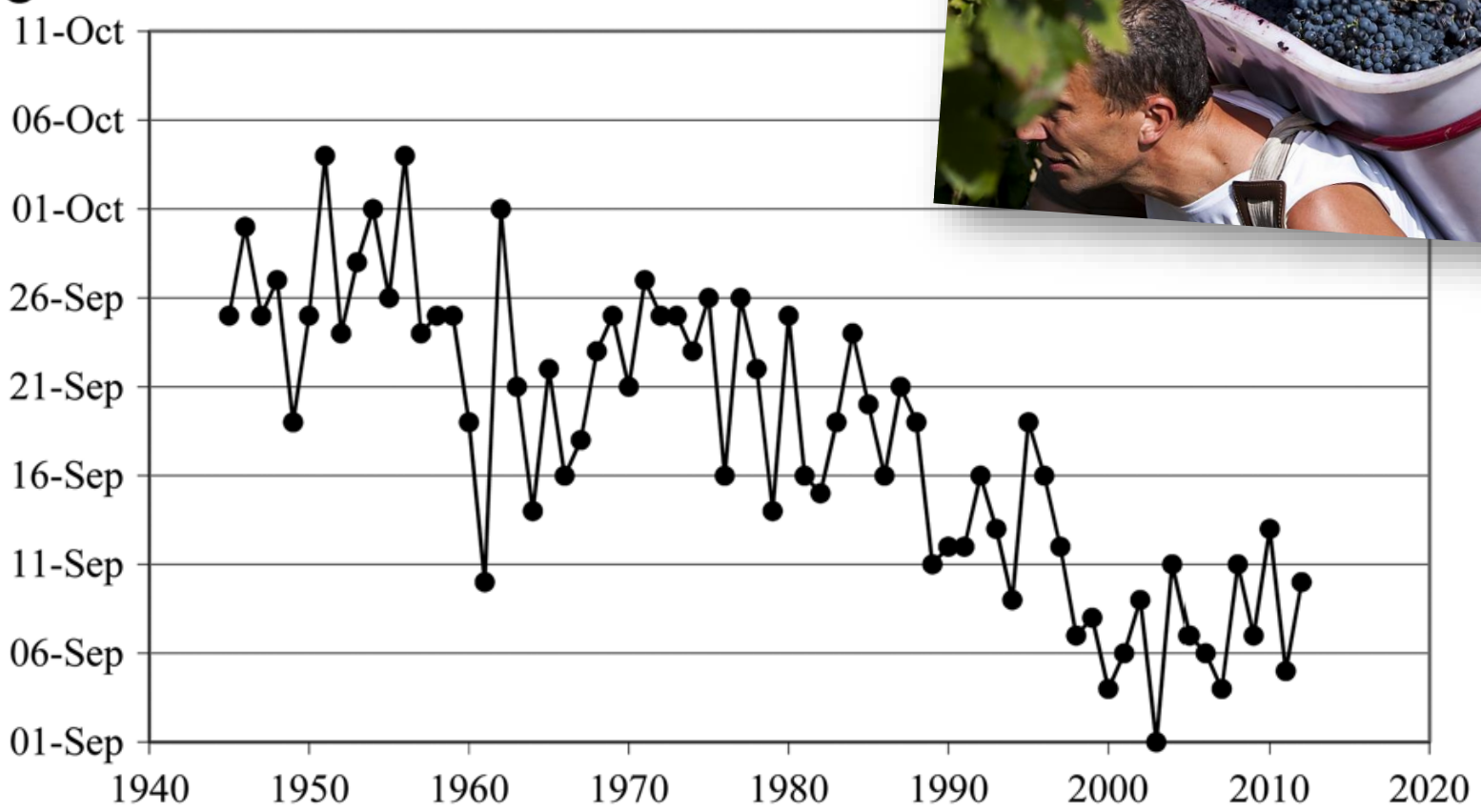
KEY OUTCOME:

shift of ripening phase to hotter part of summer = changes composition of fruit

Quoted in: Greenspan M, The Climate is Changing, Whether We Like it or Not, Wine Business Monthly, April 2020

CASE IN POINT: EARLIER HARVESTS – *CHÂTEAUNEUF-DU-PAPE*

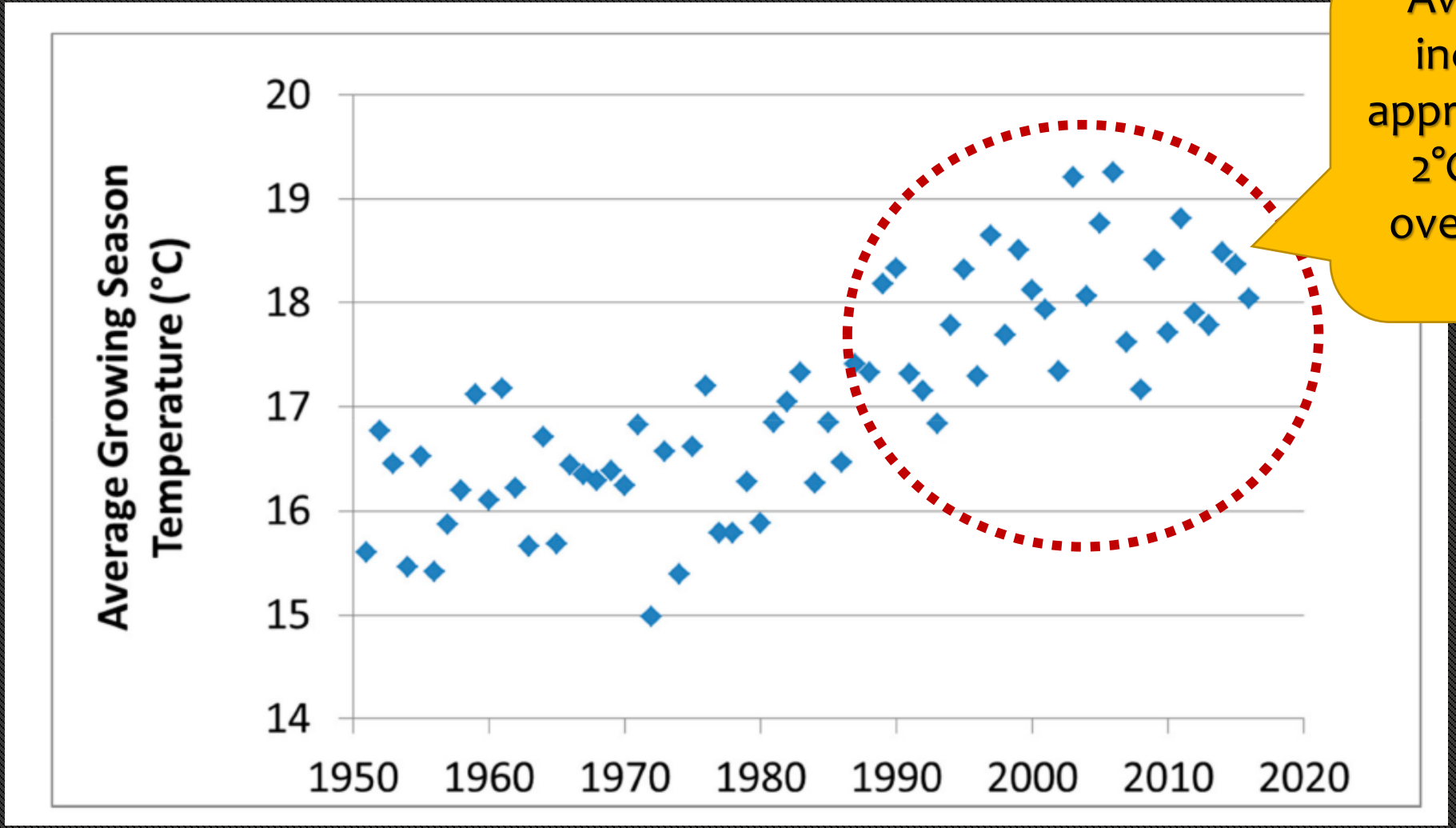
Harvest dates 1945-2012



Source: ONERC, 2014.

Cornelis van Leeuwen and Philippe Darriet, The Impact of Climate Change on Viticulture and Wine Quality, Journal of Wine Economics, Volume 11, Number 1, 2016

CLIMATE DATA FOR BORDEAUX, 1951 – 2018:
AVERAGE GROWING SEASON TEMPERATURE



AvGST has increased approximately 2°C (3.6°F) over past 70 years

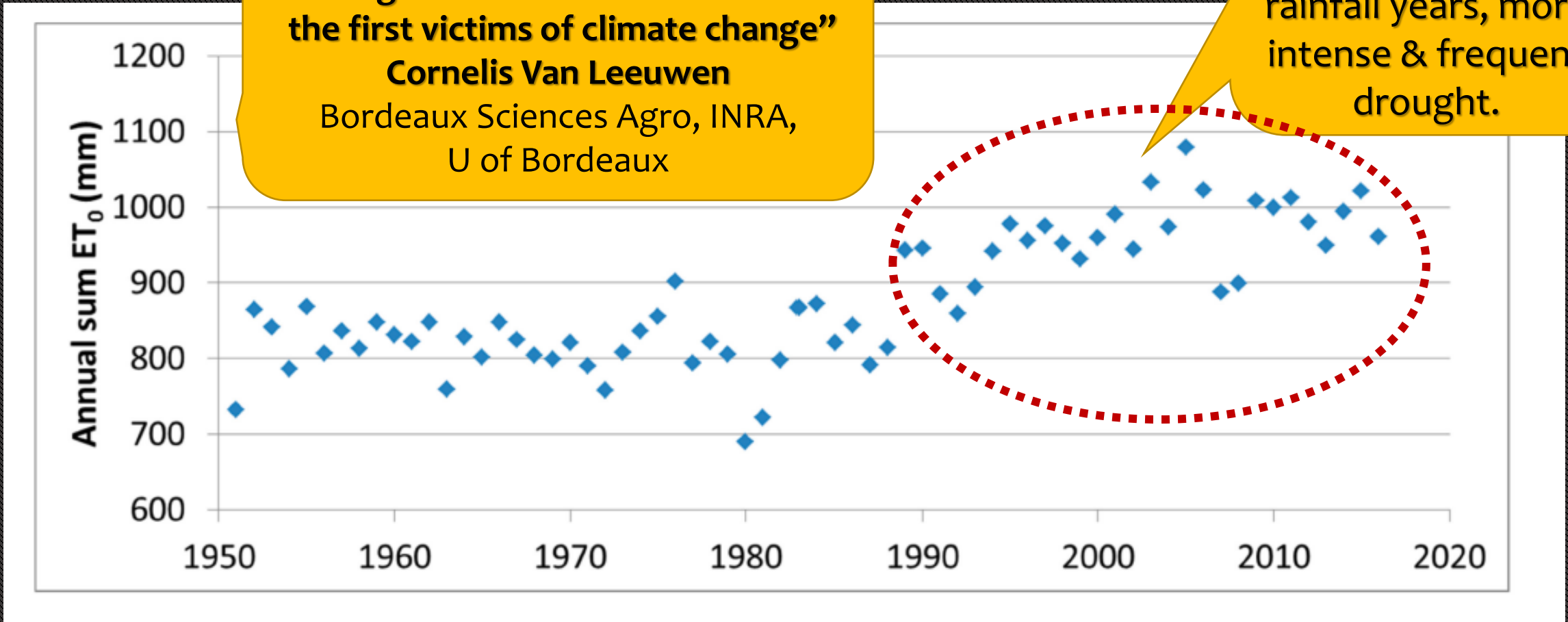
Van Leeuwen, C. et al., An Update on the Impact of Climate Change in Viticulture and Potential Adaptations, www.mdpi.com/journal/agronomy, 5 Sep 2019.

CLIMATE DATA FOR BORDEAUX, 1951 – 2018:
ANNUAL SUM OF (REAL) EVAPOTRANSPIRATION

"Sauvignon blanc and Merlot will be the first victims of climate change"
Cornelis Van Leeuwen
Bordeaux Sciences Agro, INRA,
U of Bordeaux

Higher evapotranspiration

More frequent low rainfall years, more intense & frequent drought.



Van Leeuwen, C. et al., An Update on the Impact of Climate Change in Viticulture and Potential Adaptations, www.mdpi.com/journal/agronomy, 5 Sep 2019.

GLOBAL "WEIRDING"
A TURBULENT, UNSTABLE CLIMATE

- ✓ Severe storms
- ✓ Extreme cold
- ✓ Heatwaves
- ✓ Drought
- ✓ Wildfires
- ✓ Floods
- ✓ Hurricanes?

Drought in Australia

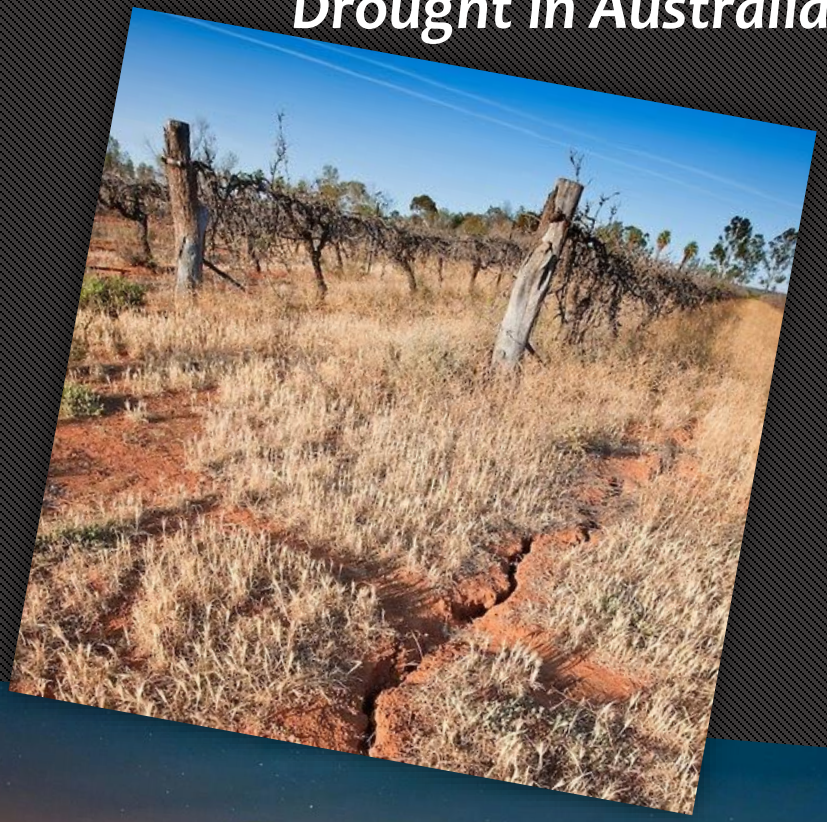


Photo The Drinks Business

Hail in Chablis

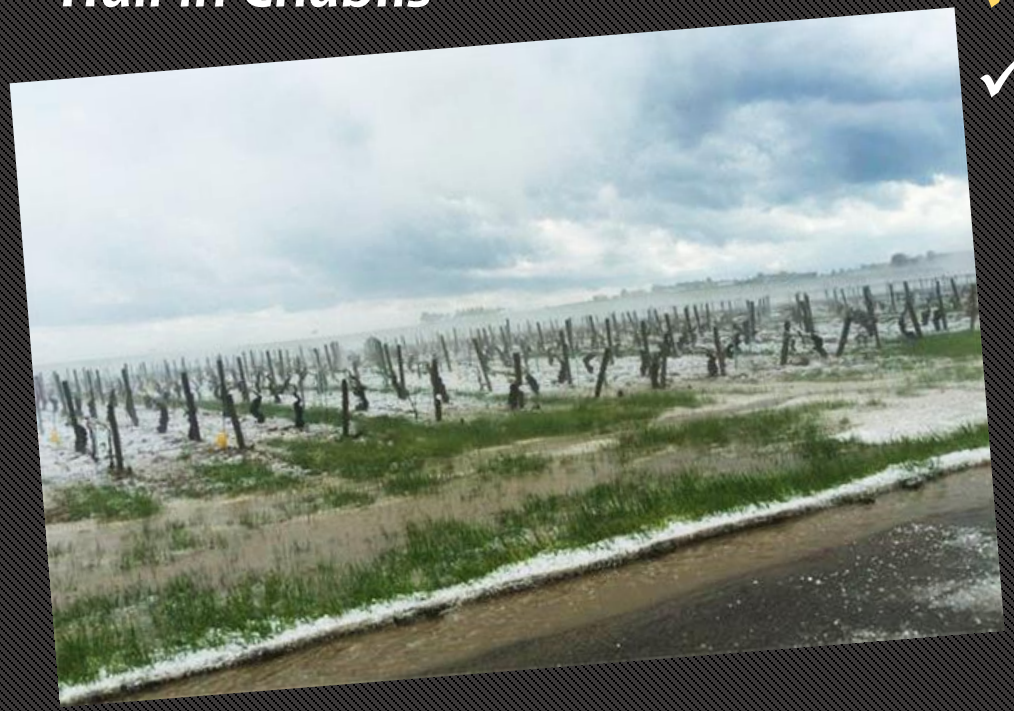
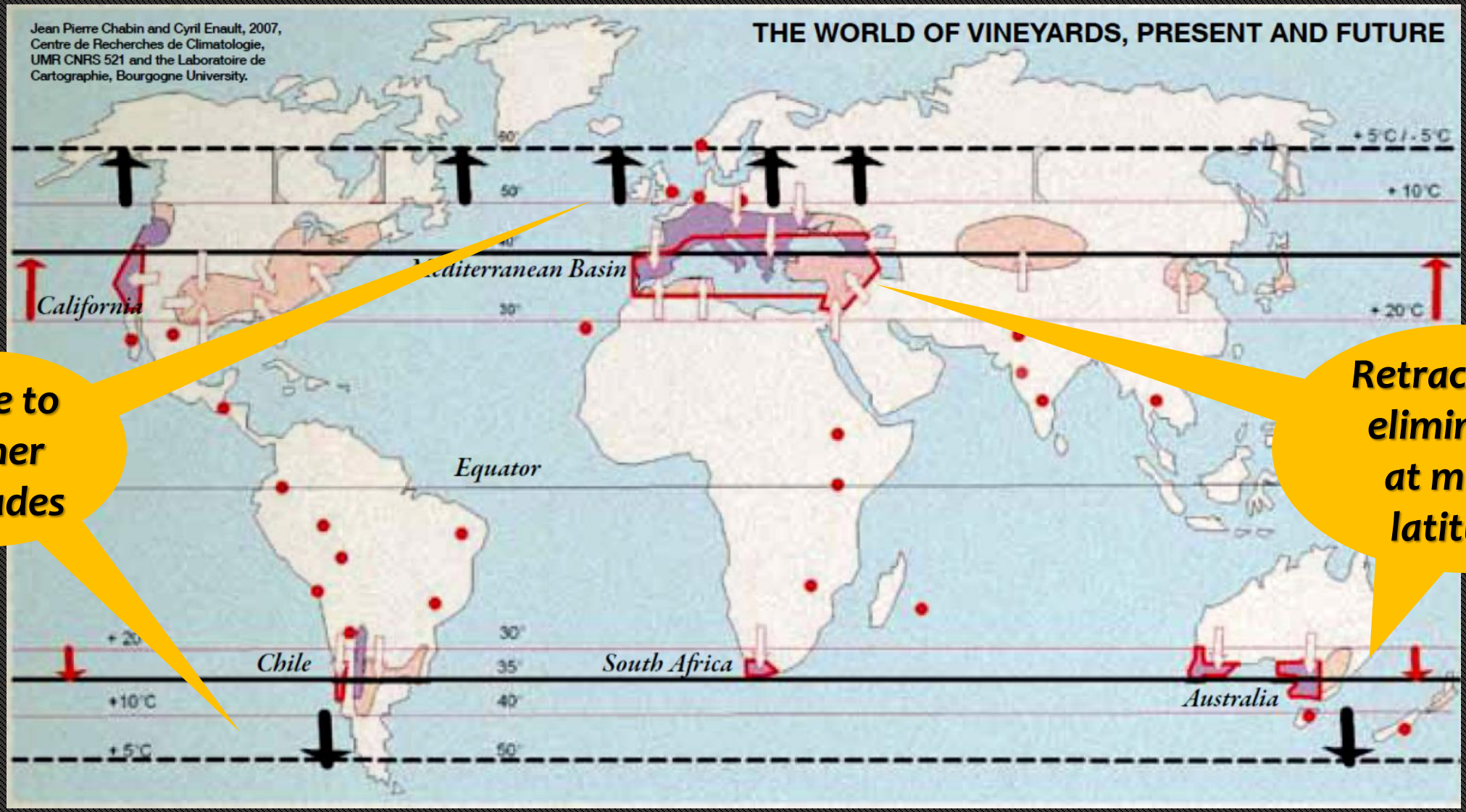


Photo Decanter Jean-Baptiste Lemoyne, copyright JBLemoyne

Wildfires

Photo Napa Valley Register/Tim Carl Photography

IS THIS THE FUTURE OF THE WORLD'S VINEYARDS?



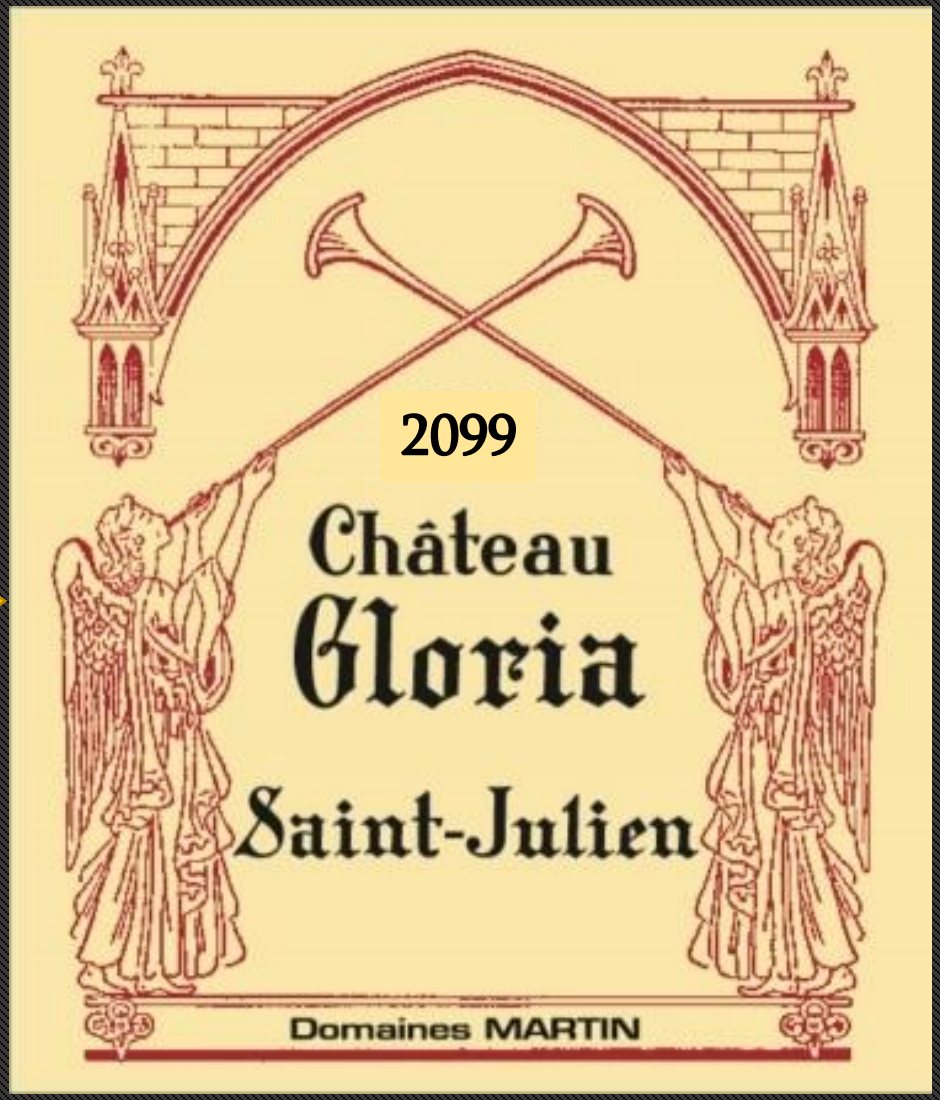
Jean Pierre Chabin and Cyril Enault, 2007, Centre de Recherches de Climatologie, UMR CNRS 521 and the Laboratoire de Cartographie, Bourgogne University.

Map taken from: Impact of climate change on wine in France, Greenpeace International, Sep 2009

RECASTING THE PARADIGM: BORDEAUX BLEND (*RED*)

TODAY

65% Cabernet Sauvignon
25% Merlot
5% Cabernet Franc
5% Petit Verdot



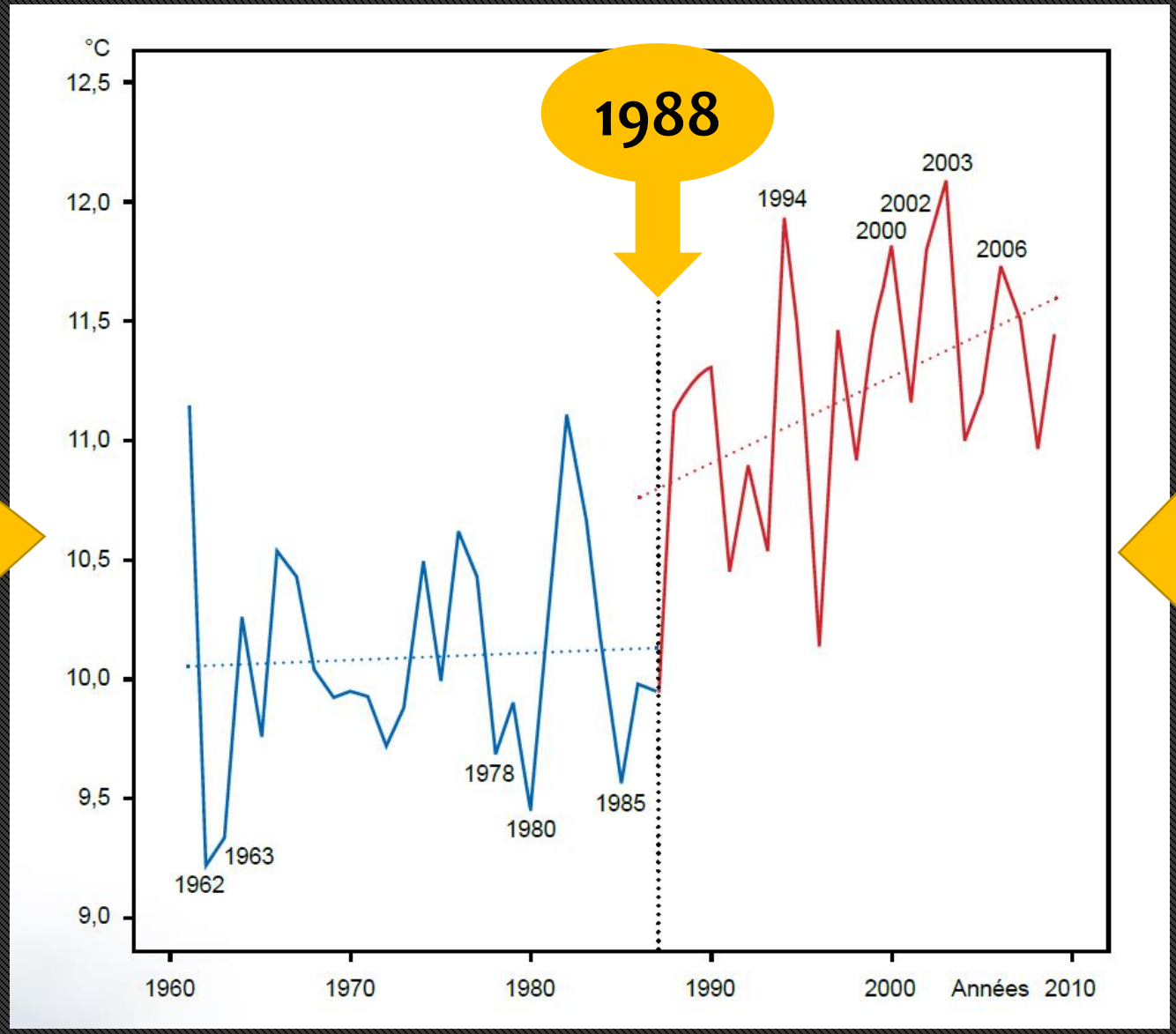
TOMORROW?

30% Cot (Malbec)
20% Petit Verdot
20% Touriga Nacional*
15% Marselan*
(Grenache x Cab Sauv)
10% Castets*
(nearly extinct, see Liber Pater)
5% Arinarnoa*
(Tannat x Cab Sauv)

**** Newly authorized***

BURGUNDY – 1961 to 2010
UNMISTAKEABLE WARMING TREND

Average annual temperature °C

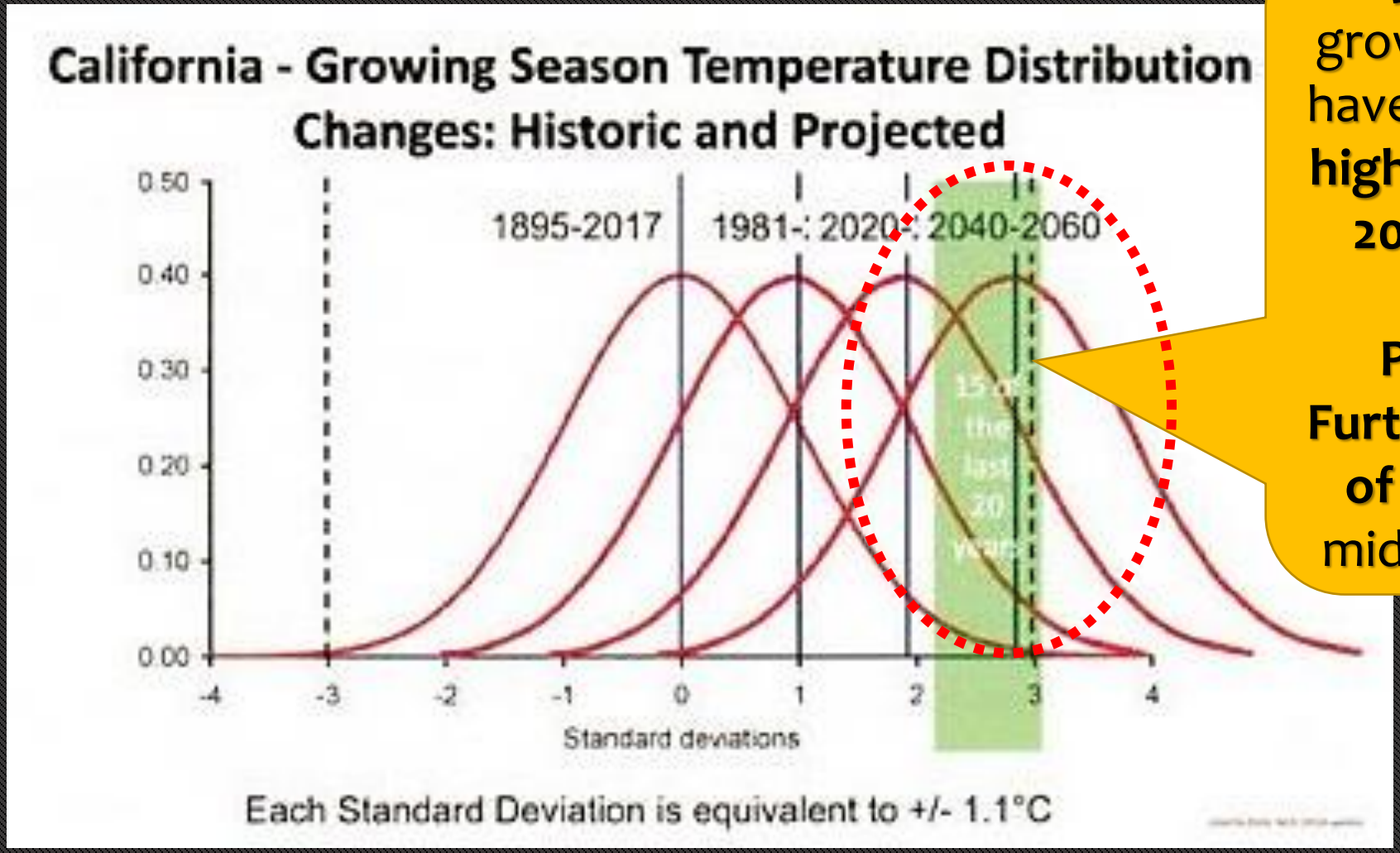


Coldest years in last 50 came before 1987. **Hottest** years in last 50 came after 1988.

LE CHANGEMENT CLIMATIQUE EN BOURGOGNE (1961-2040)
http://climatologie.u-bourgogne.fr
Yves RICHARD et Thierry CASTEL

"Climatologists Say Cabernet's Days as King in Napa are Numbered"

Larry Brooks | Wine Business Monthly | Jan 2019



15 of last 20 growing seasons have been **3° to 5° higher than 1895-2017 average.**

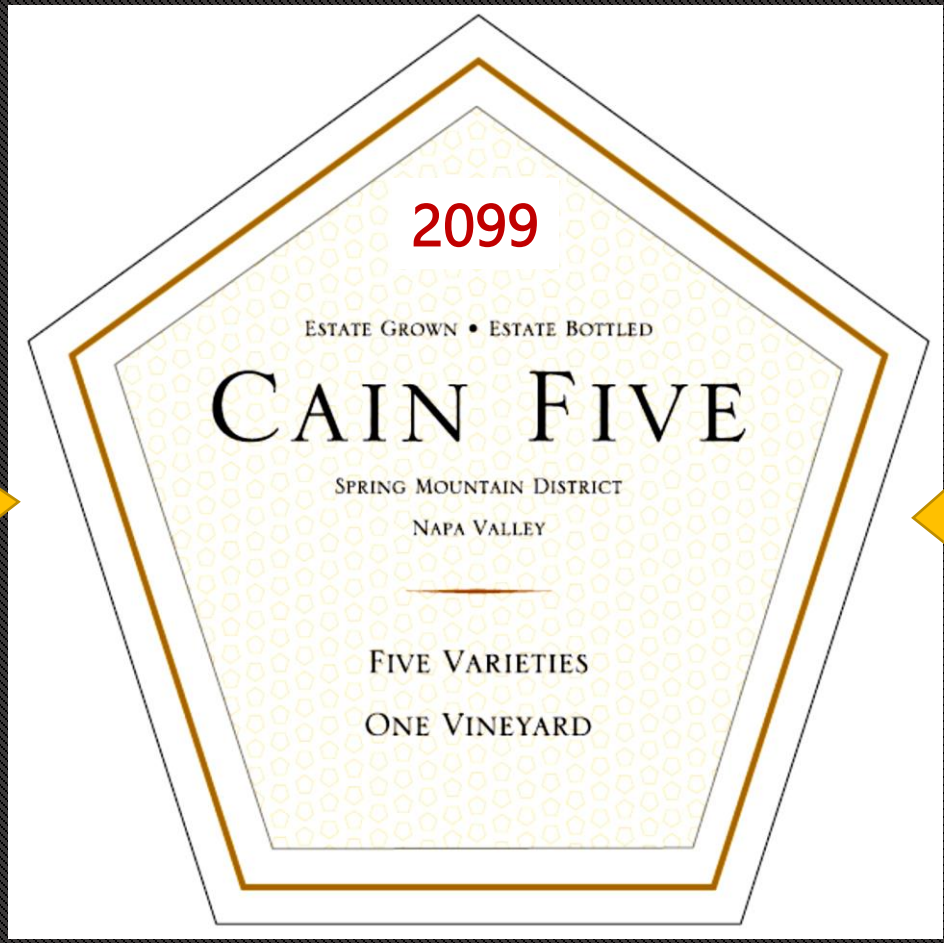
Projection: Further increases of 4° to 5° F by mid-21st century.

Larry Brooks, Climatologists Say Cabernet's Days as King in Napa are Numbered, Wine Business Monthly, Jan 2019

METAMORPHOSIS OF THE NAPA RED BLEND?

TODAY

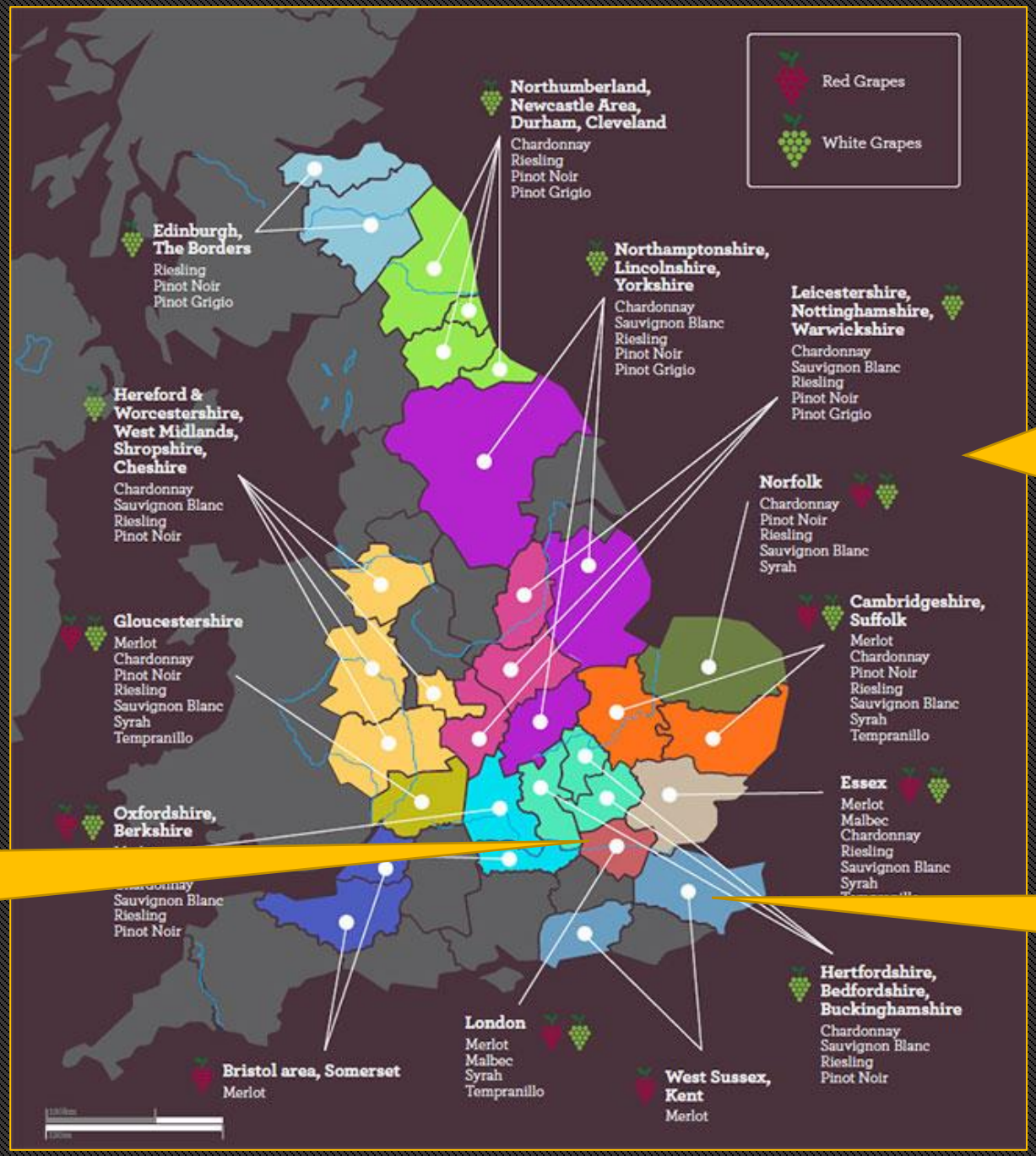
55% Cabernet Sauvignon
28% Merlot
11% Cabernet Franc
5% Petit Verdot
1% Malbec



TOMORROW?

40% Syrah
25% Malbec
15% Saint-Macaire
10% Tempranillo
10% Petit Verdot

GREAT BRITAIN 2100



Map: Laithwaites

https://blog.laithwaites.co.uk/wine-climate-change-uk-margaux-margate-chateau-petrus-chateau-peckham/ Dec 1, 2016

Pinot Noir from almost everywhere??

Malbec from London?

A Kent Merlot?

Chateau Viking: Climate Change Makes Northern Wine a Reality

The Wall Street Journal | Bojan Pancevski | Oct 29, 2019

61.1° N

Slinde Vineyard Sognefjord, Norway

World's most northerly vineyard?

"We have won gold medals in a blind wine tasting competition for our white wine Lydia (Solaris), our red wine based on Leon Millot and our special blended white wine."
Bjorn Bergum, owner
Slinde Vineyard, Norway

Léon Millot = M & G 101-14 x Goldriesling (hybrid)