

Be-7などによる宇宙線強度時間変化の検出

(H27年度研究費：350千円、旅費：250千円)

乗鞍高度における宇宙線生成核種濃度の短時間変動の観測

(H27年度研究費：旅費：100千円)

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outline

- 2000年から16年間のBe-7濃度の観測について
- 乗鞍観測について

objectives

過去の宇宙線生成核種の変動を評価するために現在の宇宙線生成核種の変動を調べる

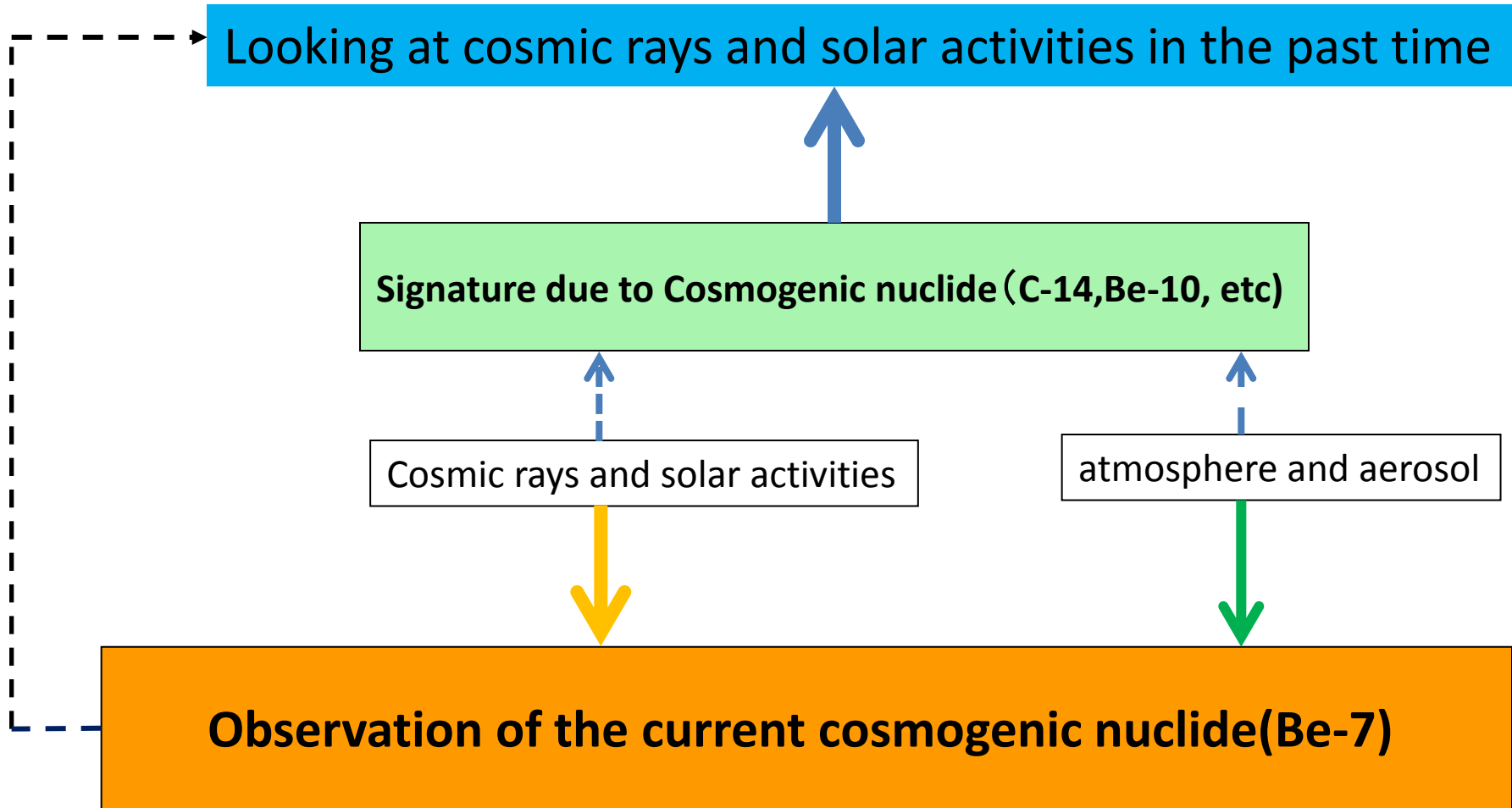
Looking at cosmic rays and solar activities in the past time

Signature due to Cosmogenic nuclide (C-14, Be-10, etc)

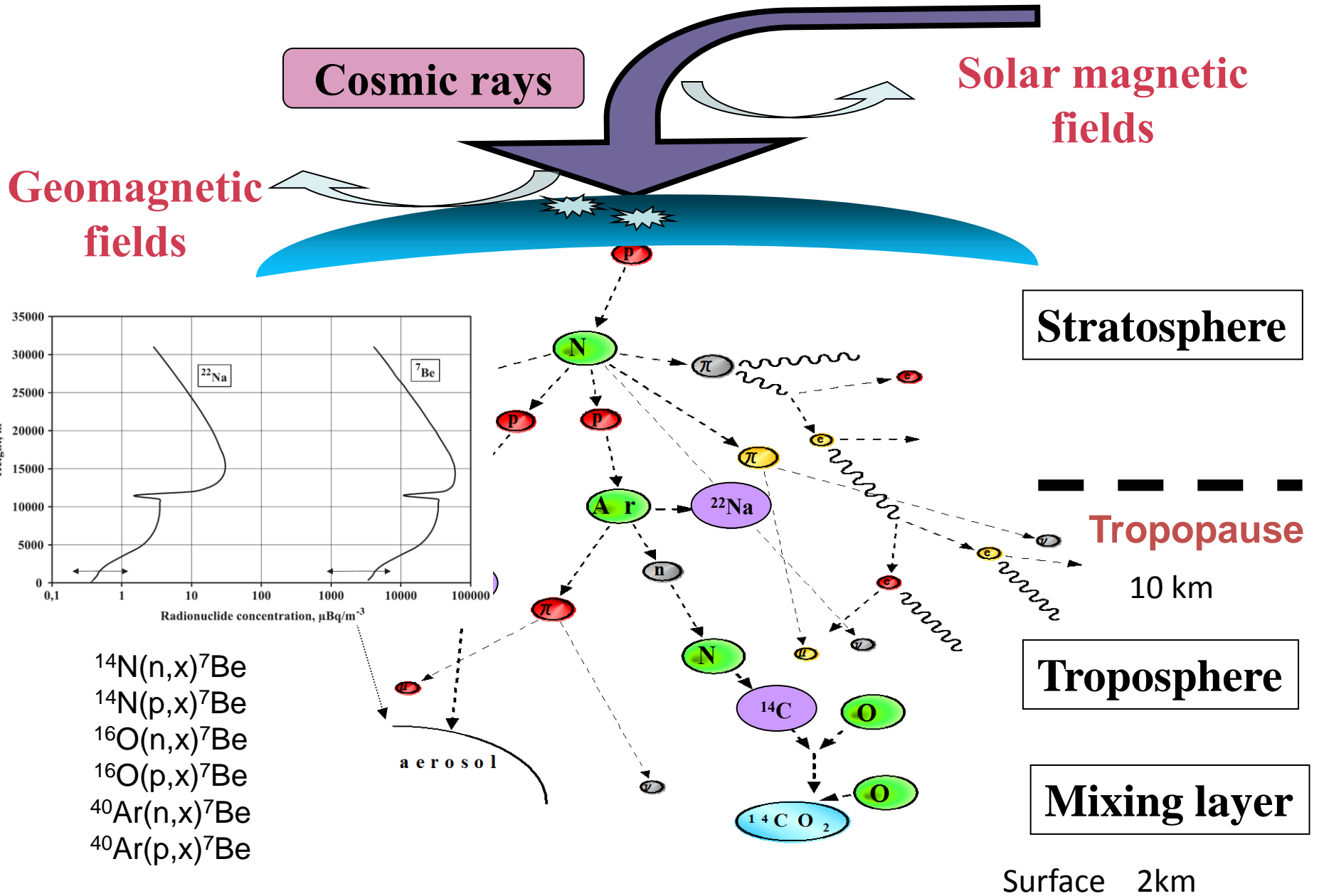
Cosmic rays and solar activities

atmosphere and aerosol

Observation of the current cosmogenic nuclide (Be-7)



Cosmogenic nuclide in the atmosphere



Daily Sampling and Measurement of Be-7 in the atmosphere from 2000

Sampling site
Altitude: 153 m
Latitude: 38.25
Longitude: 140.3



Collected filter

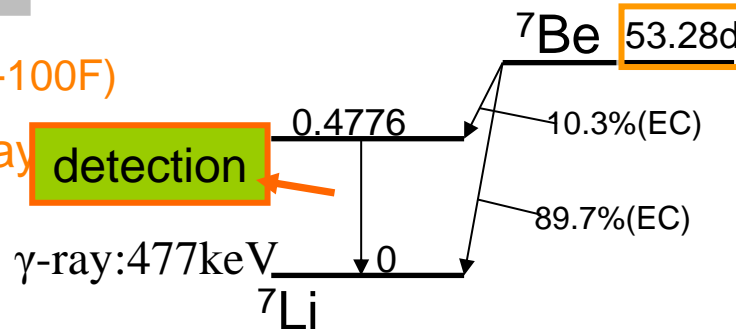
- Glass fiber filter
 collection efficiency : 99.99%
 (ϕ 0.3 μ m particle)

Measurement time : 6 hours

detection efficiency	2.68%
resolution @1.33MeV	1.69keV

High Volume Air Sampler (HV-100F)

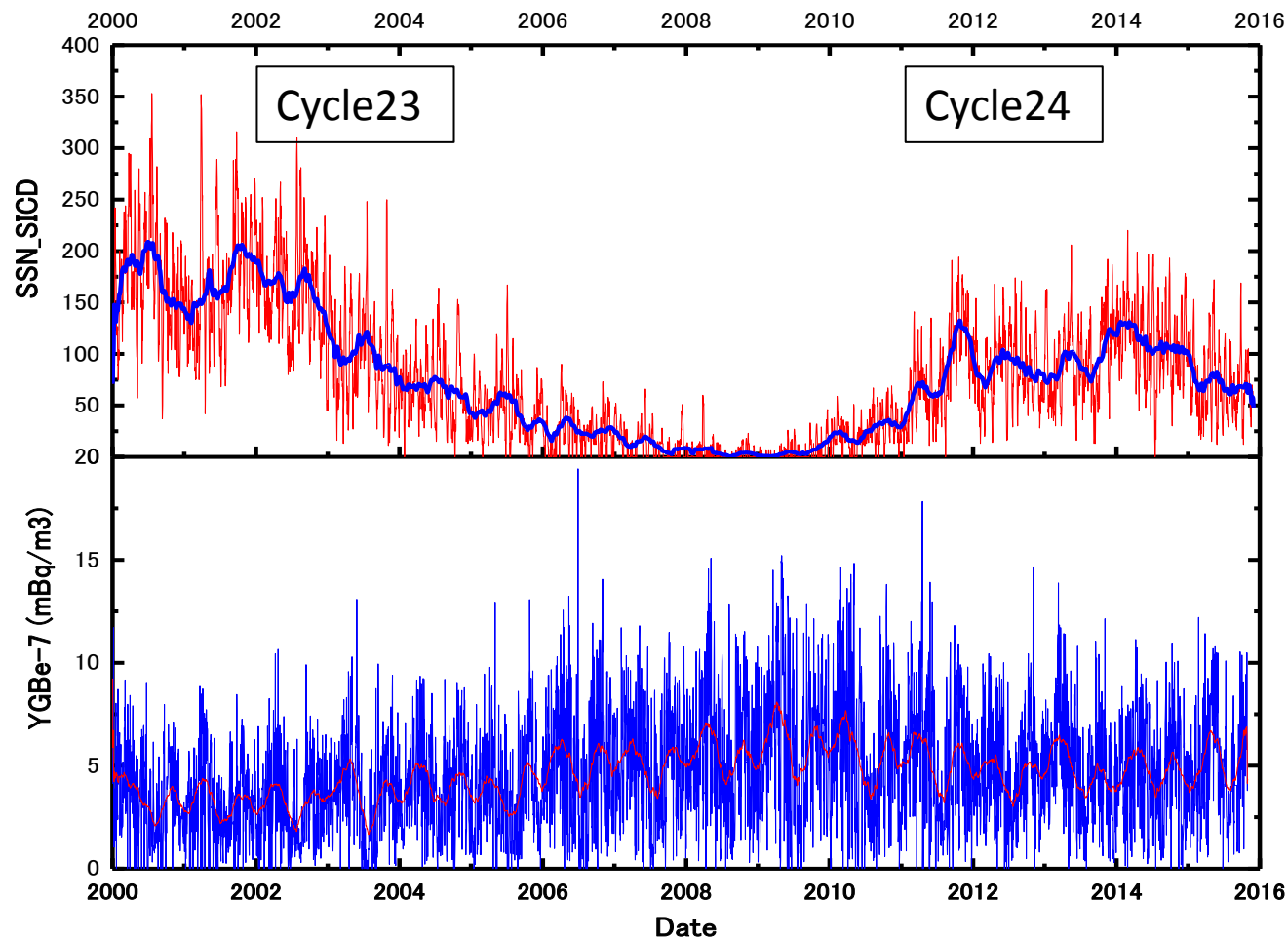
Sampling time: 23 hours/day
 Intake rate: 1000 L/min.



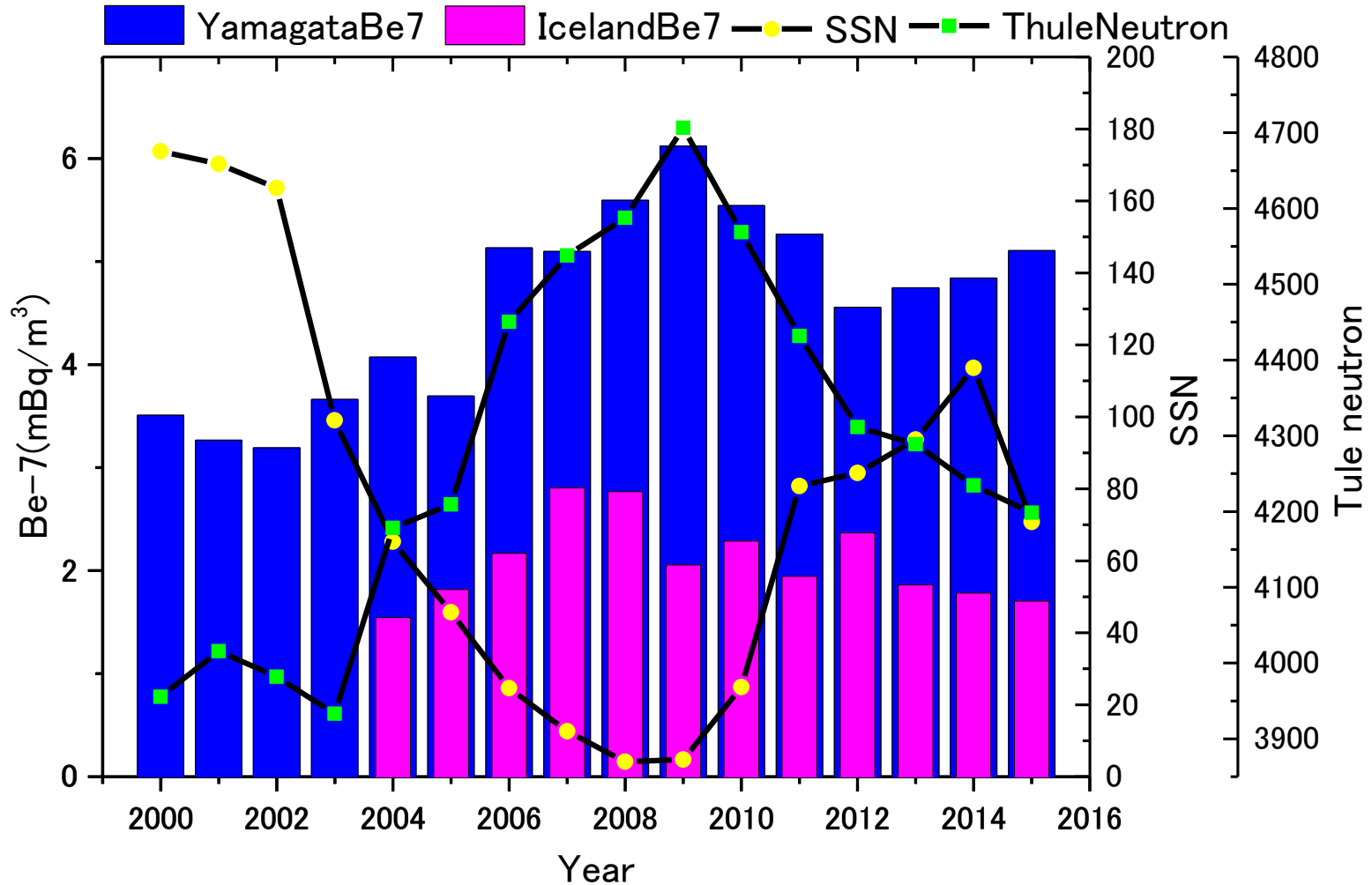
柏地下微弱放射能測定設備

HPGe detector

Daily variation in Be-7 concentrations for 16 years from 2000

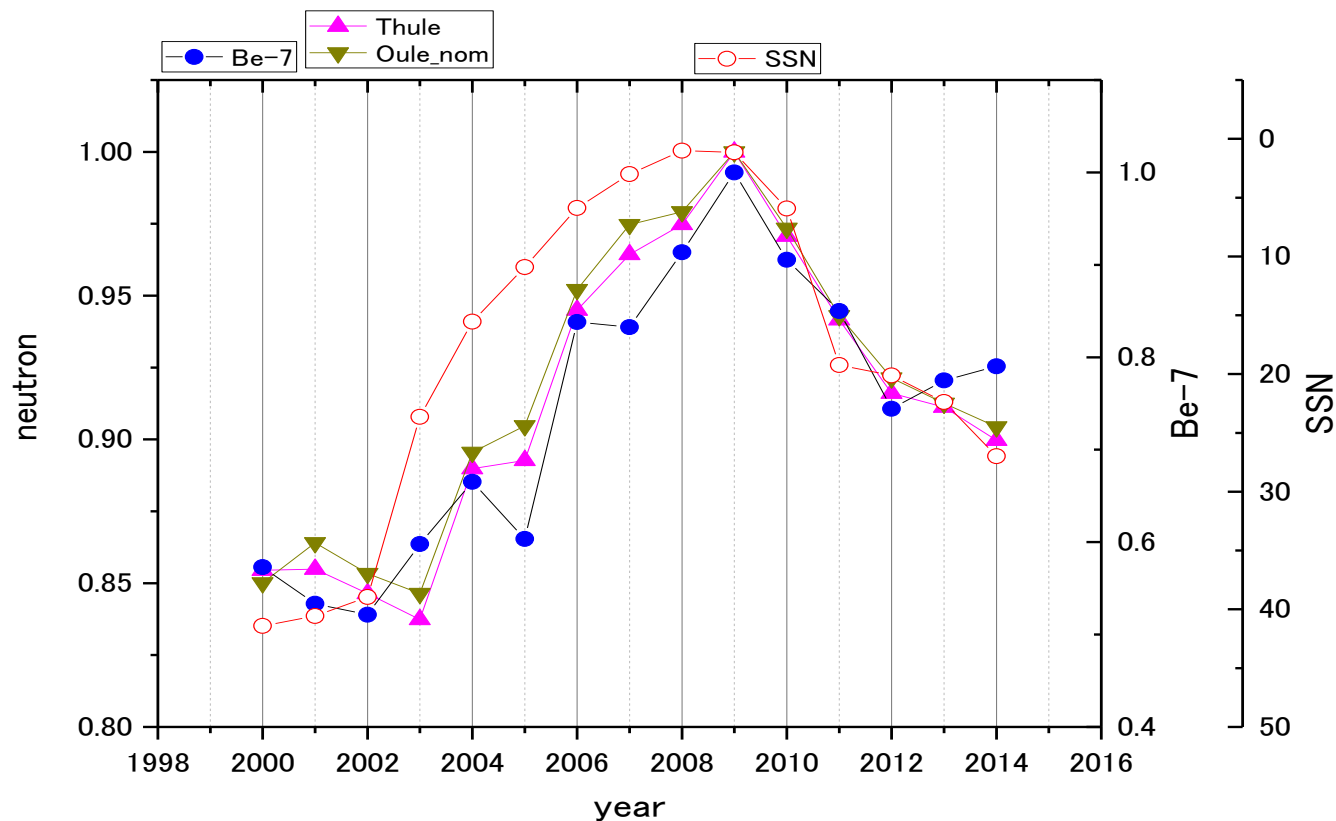


Yearly profile of Be-7 concentrations from 2000 to 2015



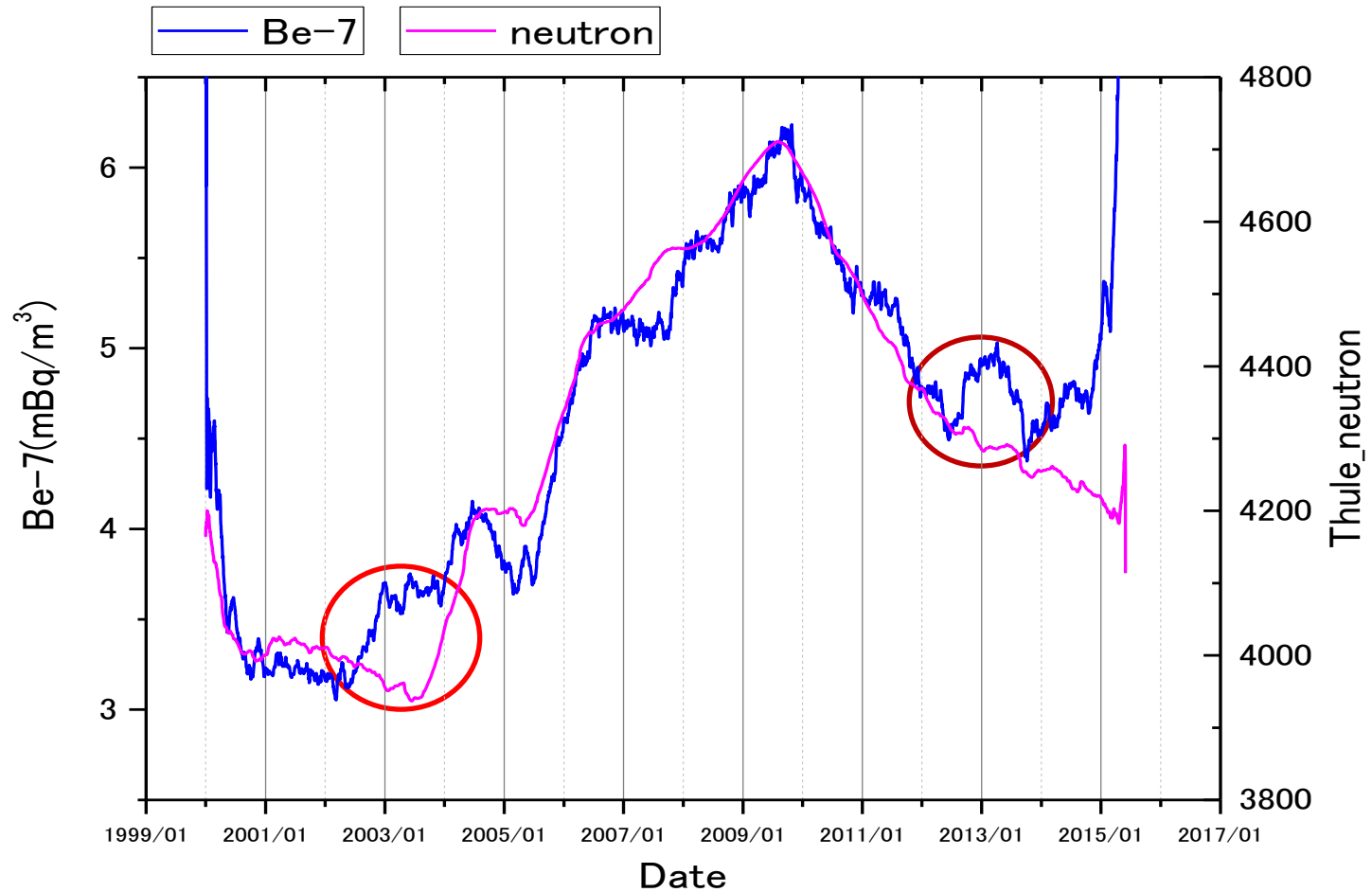
Be-7:2015 Oct. SSN:2015 Nov. Thule: 2015 May

profiles of Be-7,neutron,and ssn to normalized to 2009

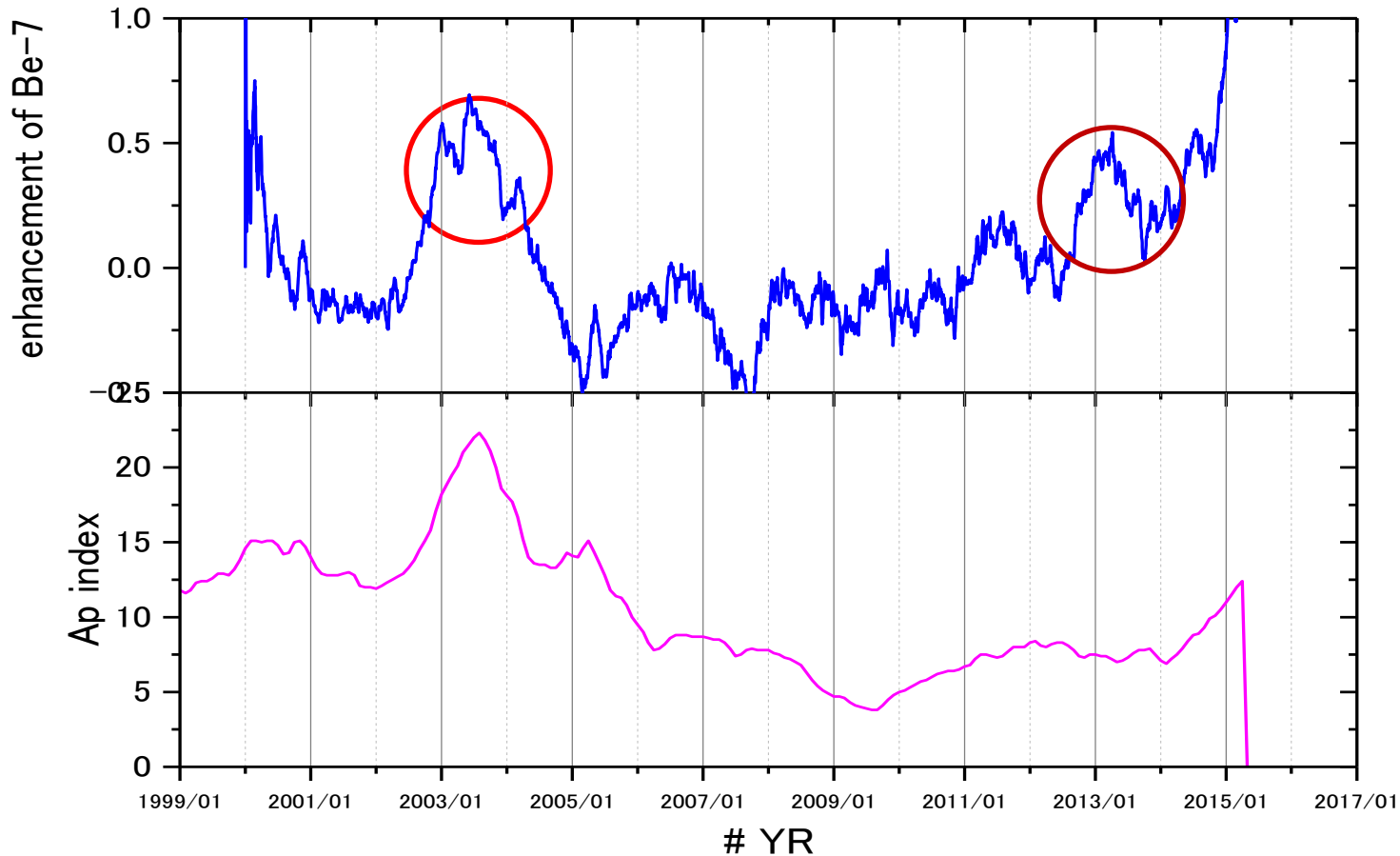


- Be-7の濃度変動は中性子強度の約3倍
- 相関係数 Thule:0.96(0GV), Oule:0.94(0.8GV)

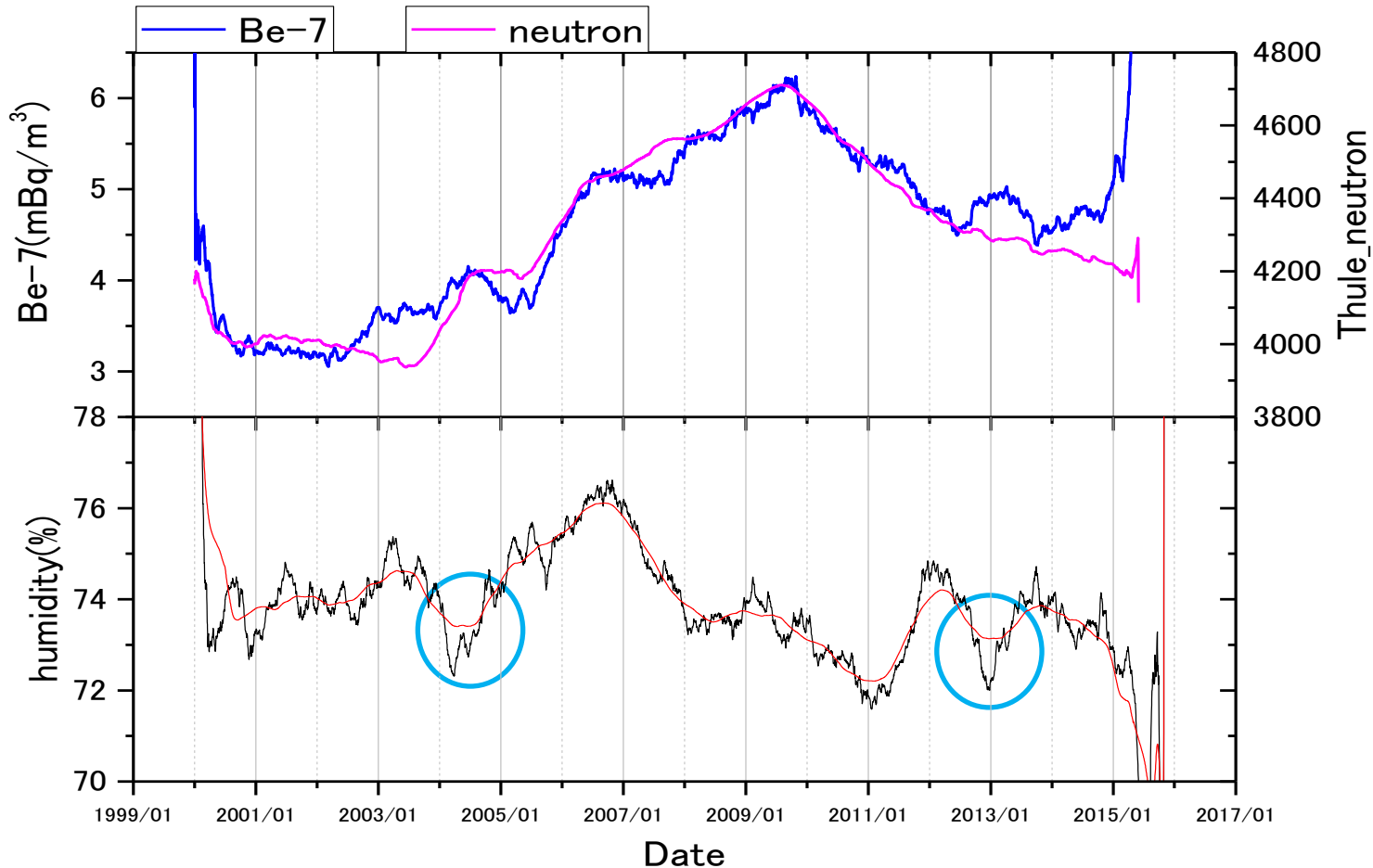
Difference between the profiles of Be-7 and neutron



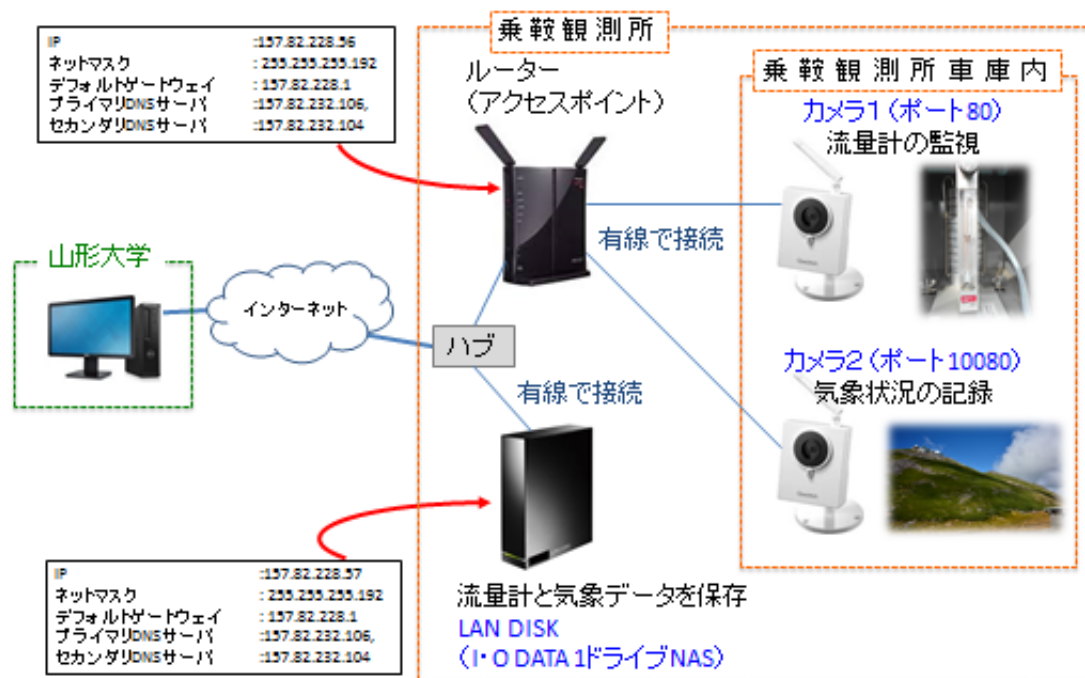
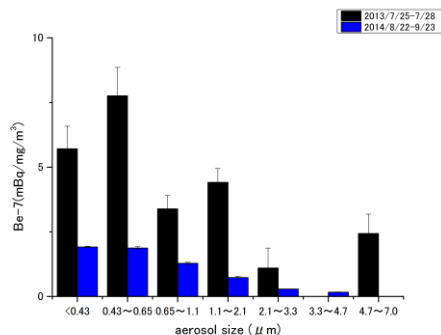
Comparison between the enhanced portions of Be-7 and Ap-index



Comparison between the enhanced portions of Be-7 and humidity



乗鞍観測所でのカメラによるモニター



乗鞍観測所と山形大学間のWEBカメラ概念図

Qwatch

Live View 

LAN DSKN00-FB19 :



Qwatch

Live View 

LAN DSKN00-FB19 :



まとめ

- 16年間のBe-7濃度変動の観測を継続している
- 太陽活動サイクル23から24への変化に対応したBe-7濃度変動が観測された
- 気象データとの相関を調べた
- 乗鞍観測の機能強化について示した