【SG10】自然放射線の時系列データを読み解く

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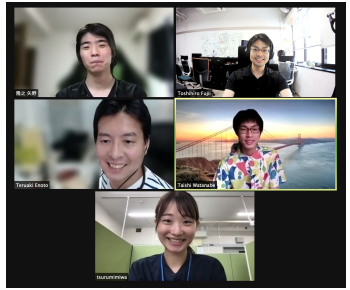
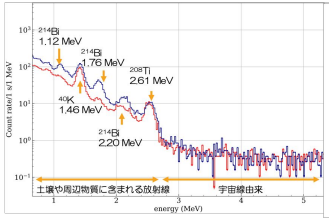
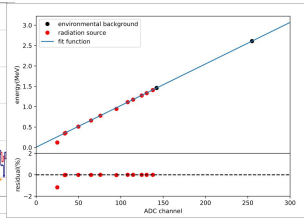
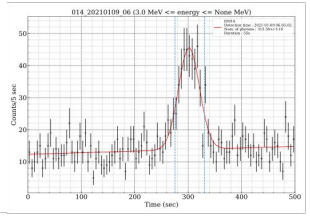
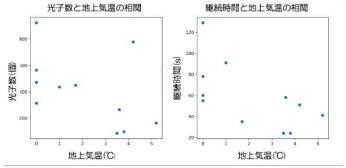
学生：矢野隆之（理学部），渡邉大師（工学部情報学科），鶴見美和（理研/青学理工学部）

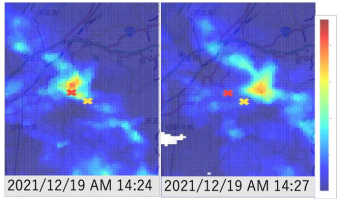


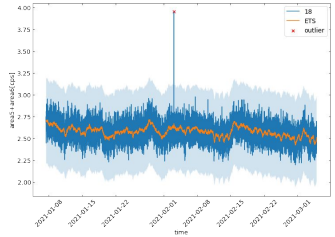


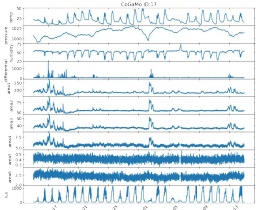


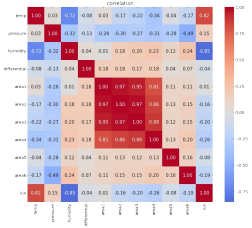


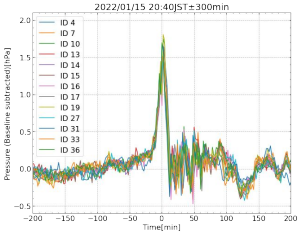


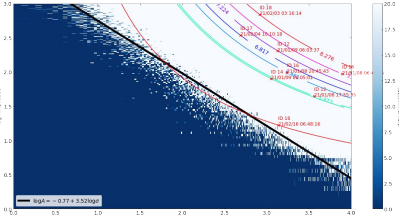


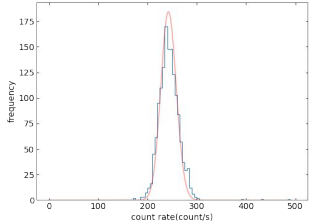


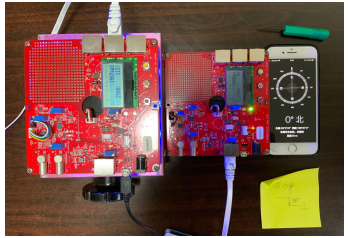


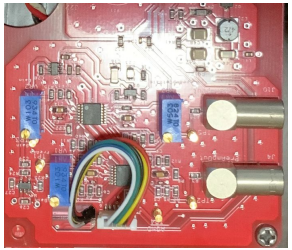


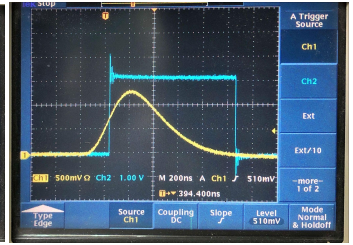


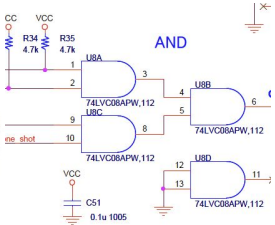






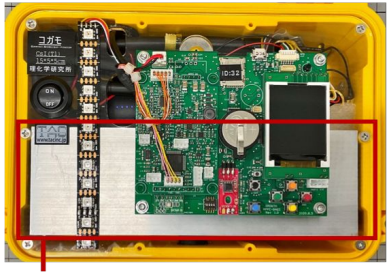






5分用

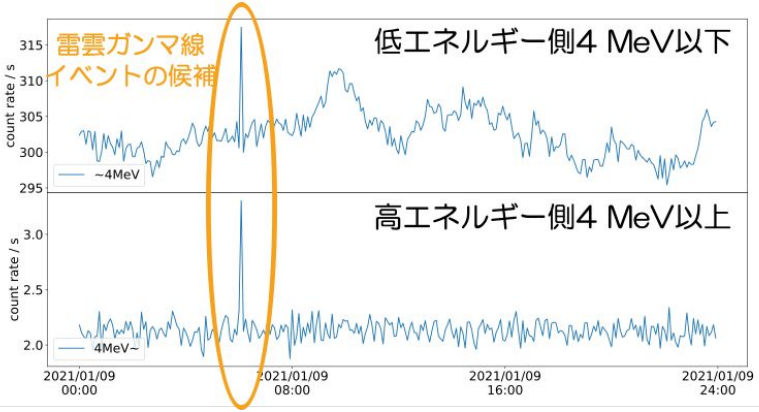
コガモ検出器(Compact Gamma-ray Monitor)で検出した雷雲ガンマ線の解析



CsI(Tl)シンチレータ

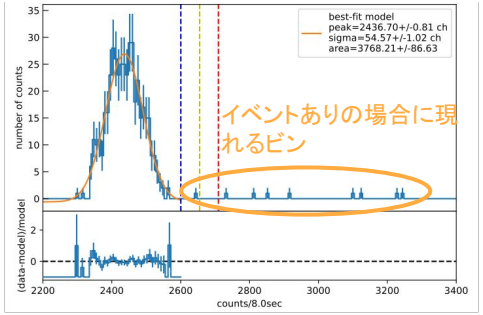
・雷雲からのガンマ線を検出する放射検出器
・小型で持ち運びやすい
・エネルギー帯域　0.2~12 MeV

コガモで観測したカウントレート

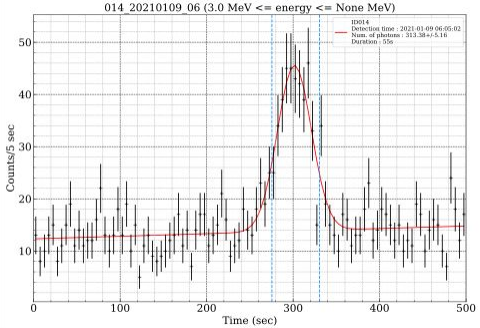


コガモで観測したデータから
雷雲ガンマ線イベントを見つけた！

カウントレートのヒストグラム

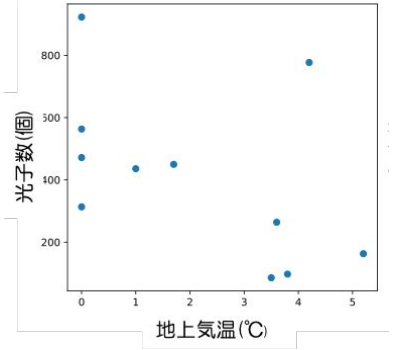


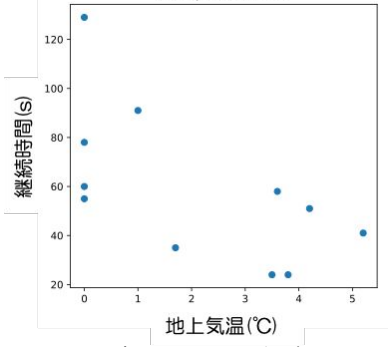
見つけたイベントのライトカーブの例



中心時間…2021年1月9日6時5分
光子数…313.38±5.2個
継続時間(T80)…55秒

それぞれのイベントの
光子数と継続時間を
地上気温と比較してみた

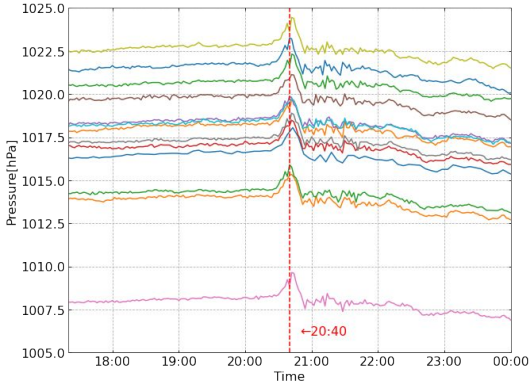


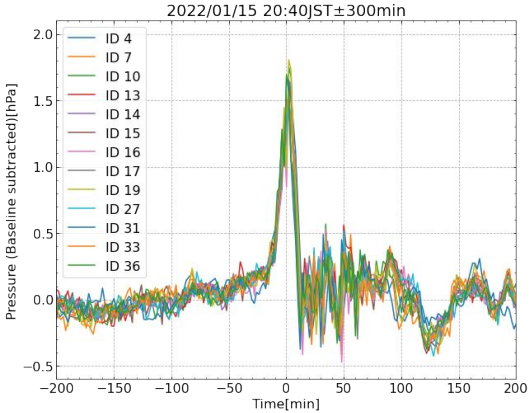


地上気温と継続時間
→負の相関？

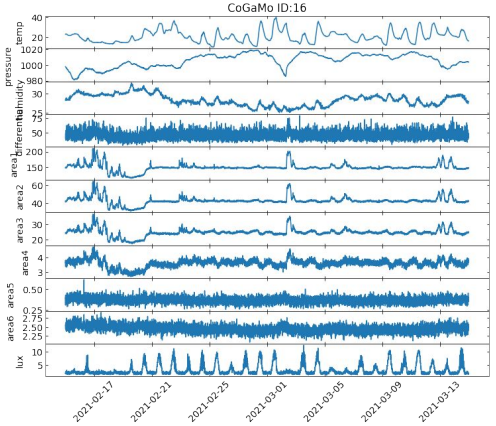
コガモで取得したデータで遊ぶ

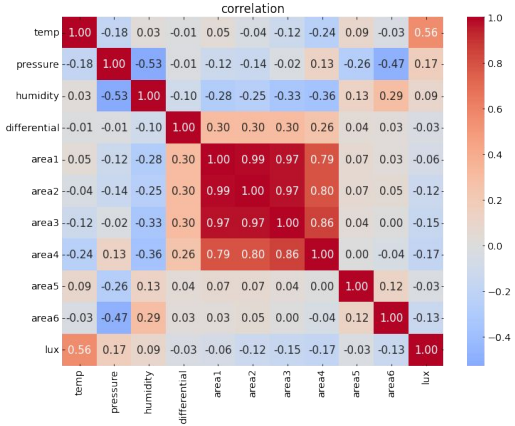
トンガでの噴火の影響（気圧変化）がコガモでも観測できた！



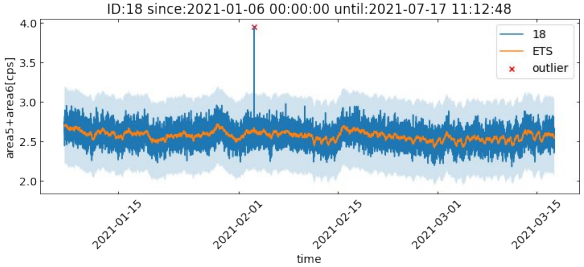


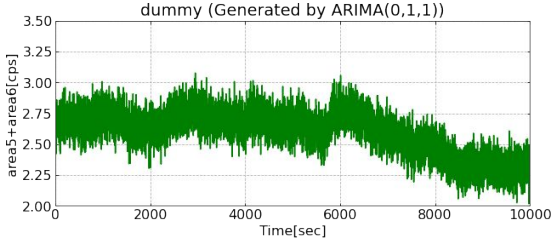
環境データ（気温、湿度、気圧、etc）や放射線量に相関はあるのか？

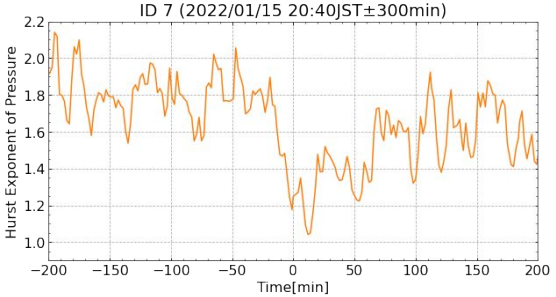




異常検知法、予測を試してみた！
ダミーデータを生成してみた！

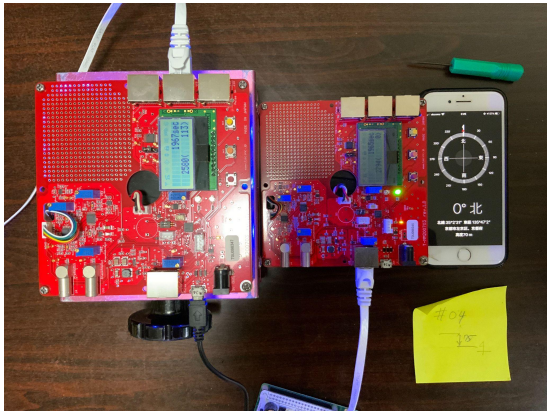


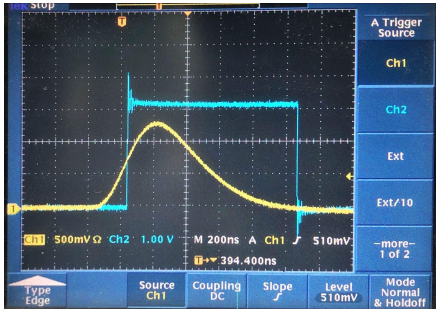
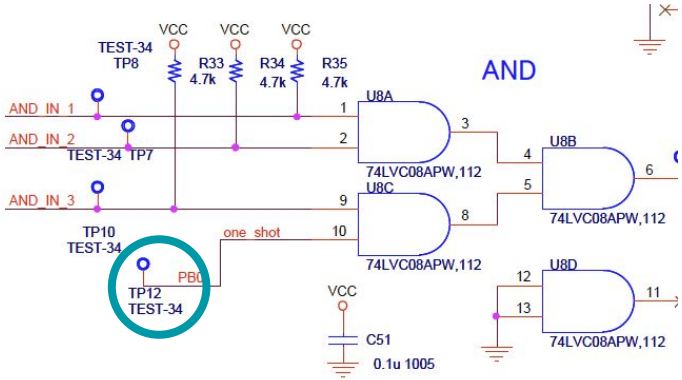
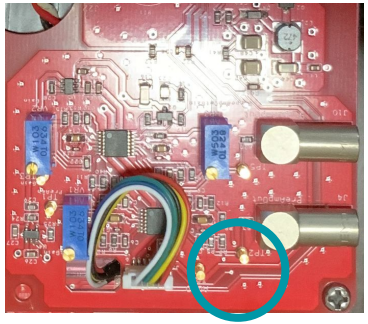




アカクラゲで遊ぼうとしたり

アカクラゲ (教育用宇宙線モニター)



- プラスチックシンチレータ (100x100x20mm)
- MPPC読み出し
- コインシデンスモードで動作可能
- Signalを読み取ると光る!
  部屋の外から分かるくらい眩しかったので途中からOFFにした…

アカクラゲで時系列データを読み解けるようにしようとした