



Southeast Saskatchewan
Airshed Association

Southeast Saskatchewan Airshed Association 2006 Annual Report

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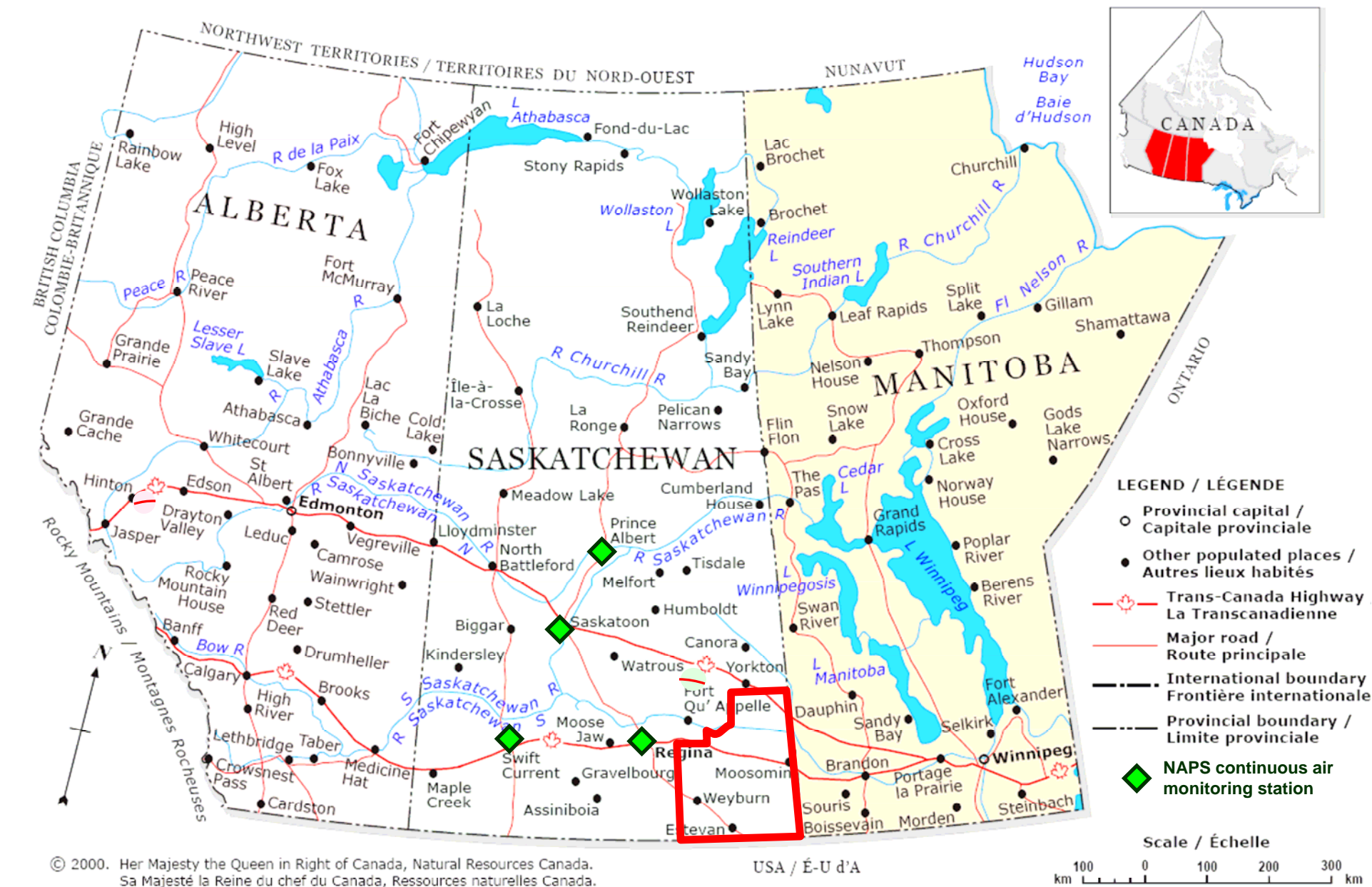
Outline

- ① Background
- ② SESAA Airshed
- ③ Air Monitoring Results
- ④ Summary
- ⑤ Next Steps

1. Background

- Air quality concerns in SE Saskatchewan
- Southeast Saskatchewan Airshed Association (SESAA) was established in 2005
- SESAA is first airshed association in SK
- SESAA is a collaborative group of industry, government, NGOs, and private citizens
- It's mandate is to monitor air quality in the region

2. SESAA Airshed



Economic Activities in the Airshed

Agriculture



Oil & Gas



Mining



Power



Transportation

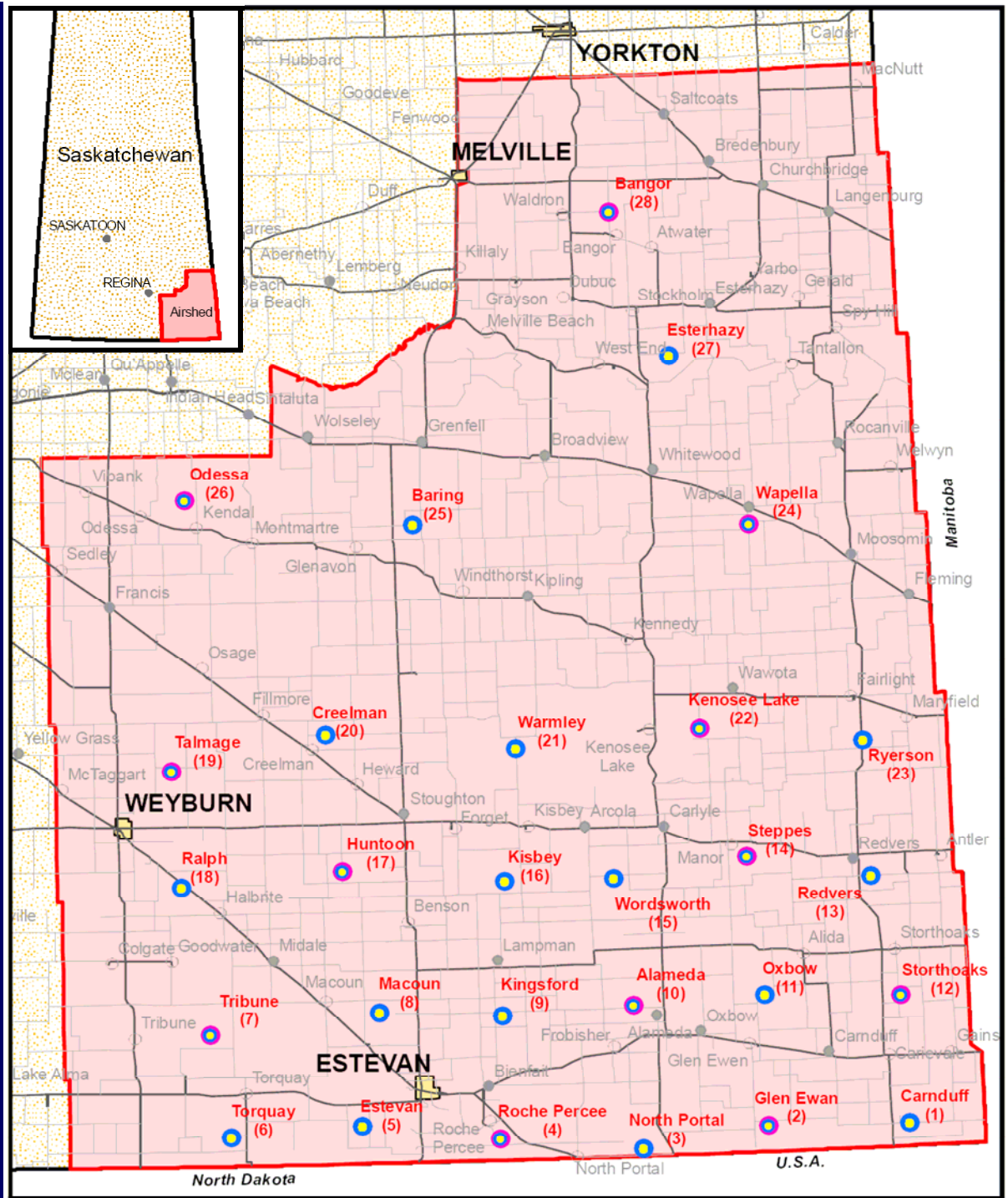


SESAA Airshed

- Area = 38,000 km²
- Municipalities = 45
- Passive samplers = 28
- Pollutants = SO₂, NO₂, O₃

Legend

| | | |
|------------|--|--------------------|
| ● Towns | SESAA Sites | — Highways |
| ○ Villages | ● NO ₂ , SO ₂ | ■ Cities |
| | ● NO ₂ , SO ₂ , O ₃ | ■ Airshed Boundary |
| | — Grid Roads | (##) Site Number |



Data Collection

- Air monitoring started in June 2006
- Samplers captured monthly average concentration
- Data capture rate was 99.2%
- Field bank and replicates were collected
- Samples were collected and analyzed in lab



SK Ambient Air Quality Standards (ppb)

| Pollutant | 1 hour | 24 hour | Annual |
|-------------------------------------|--------|---------|--------|
| Sulphur Dioxide (SO ₂) | 172 | 57 | 11 |
| Nitrogen Dioxide (NO ₂) | 212 | - | 53 |
| Ozone (O ₃) | 82 | - | - |

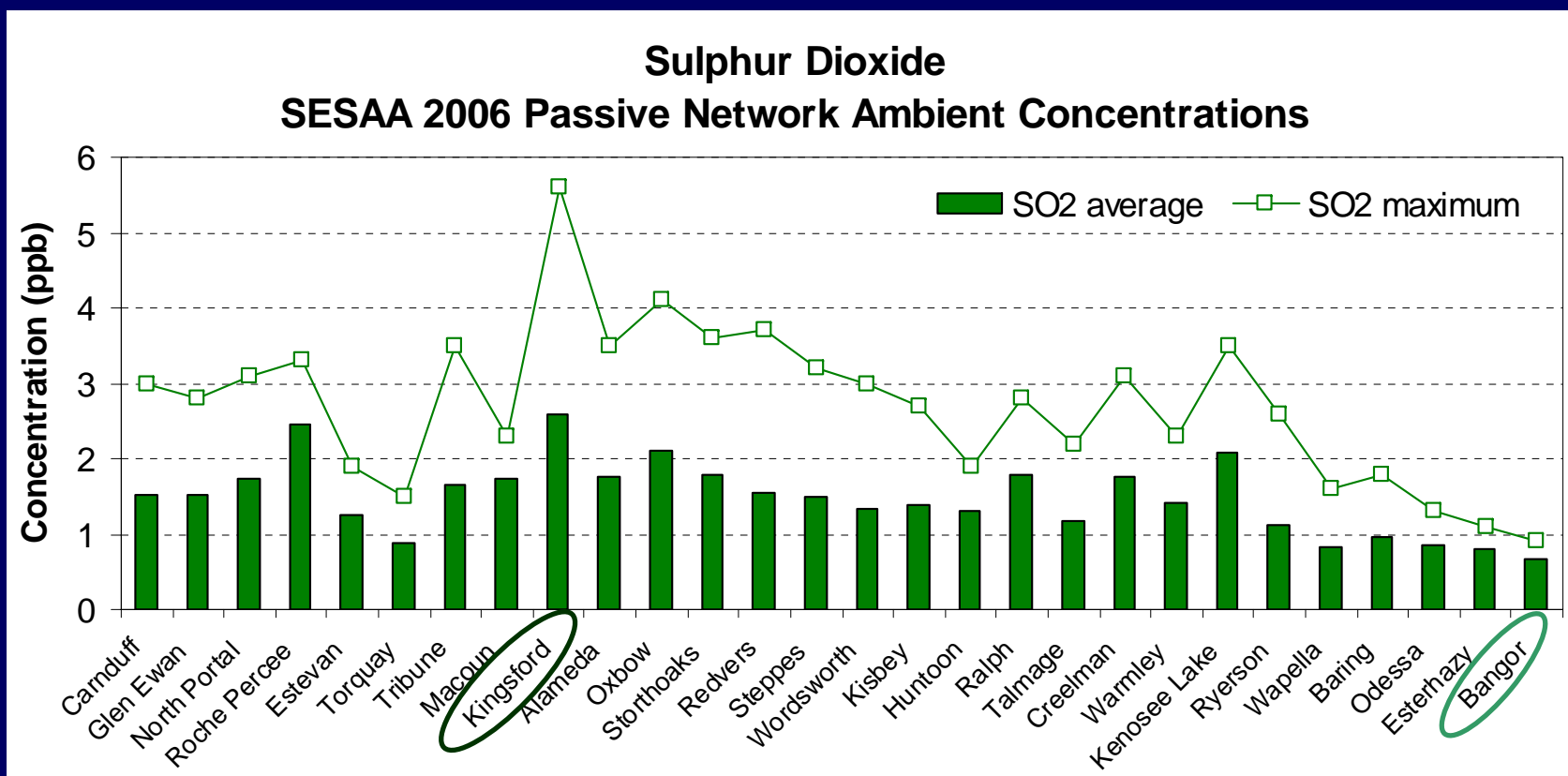
Canada-wide Standard

Ozone (O₃) -- 65 ppb, 8 hour averaging time

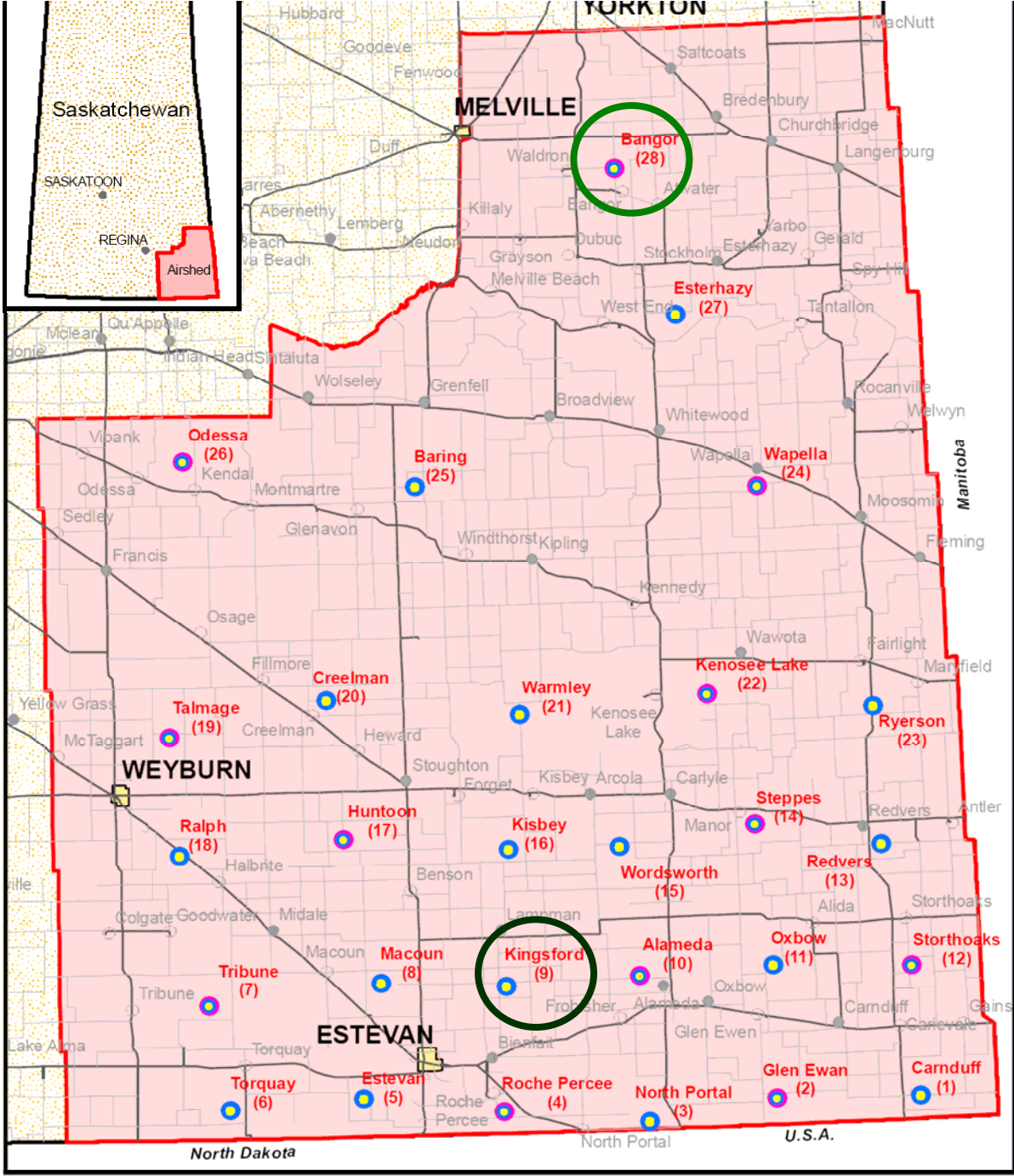
- Passive samplers capture monthly averages
- No standard exists for monthly averages
- No direct comparison of results with standards

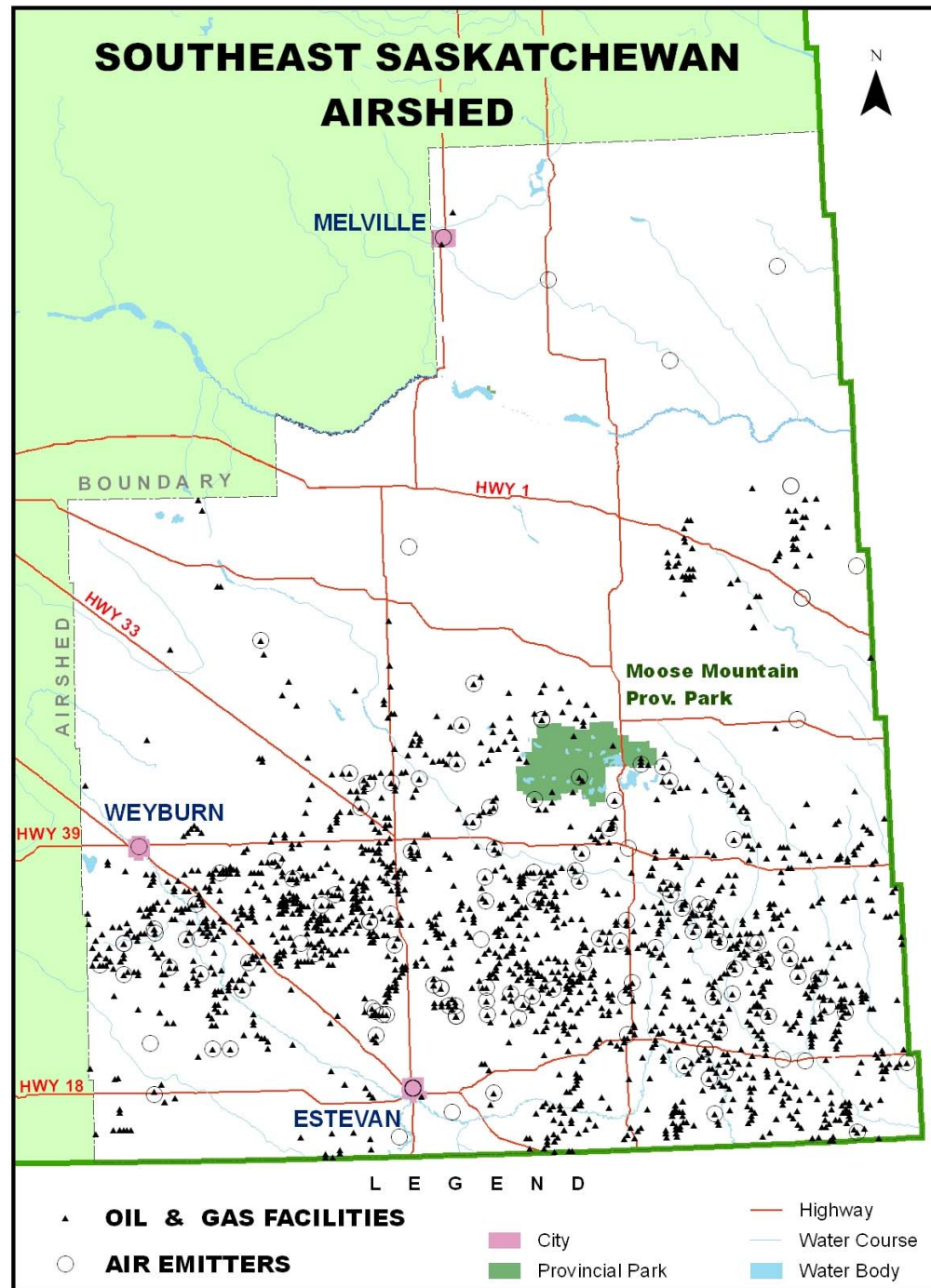
3. Air Monitoring Results

SO₂ Average and Maximum Concentrations (Jun-Dec 2006)



- Average SO₂ concentration for the entire network ~ 1.5 ppb
- Maximum SO₂ concentration for the entire network ~ 5.6 ppb
- Concentrations are below the annual standard ~ 11 ppb

$$\text{SO}_2$$




SO₂ Spatial Distribution (Jun-Dec 2006)

Higher concentration in the south

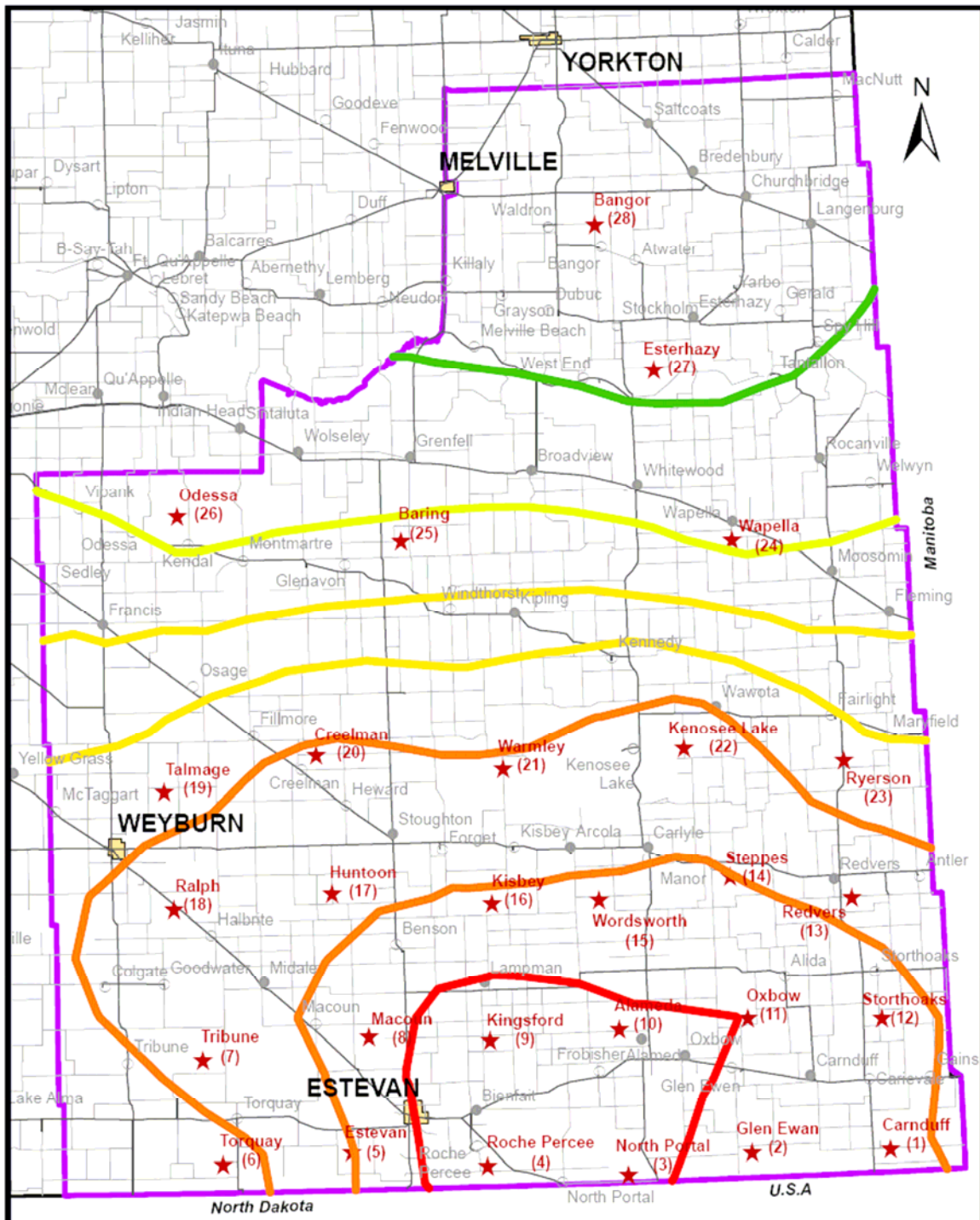
Lower concentration in the north

Legend

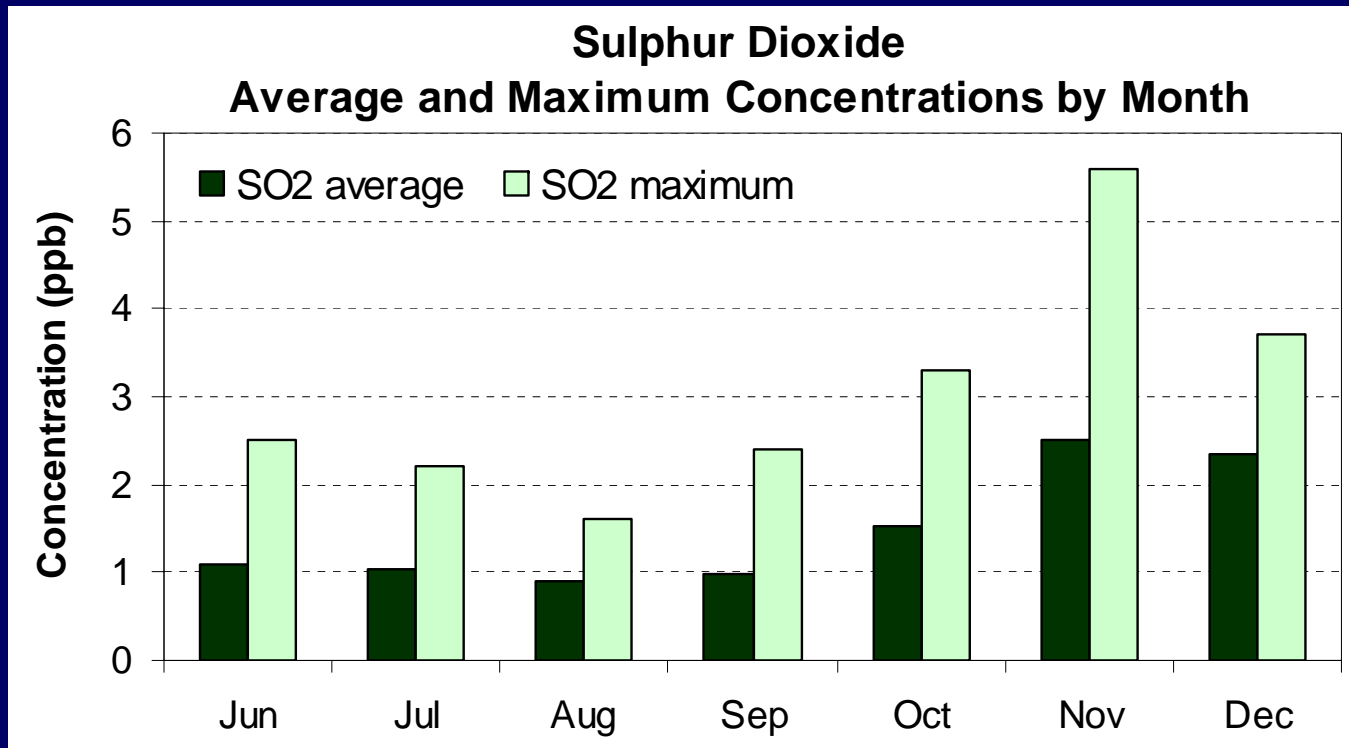
SO₂ Concentration Value



- Towns
- Villages
- ★ SESAA Sites (##) Site Number
- Highways
- Grid Roads
- ⊕ Cities
- Airshed Boundary

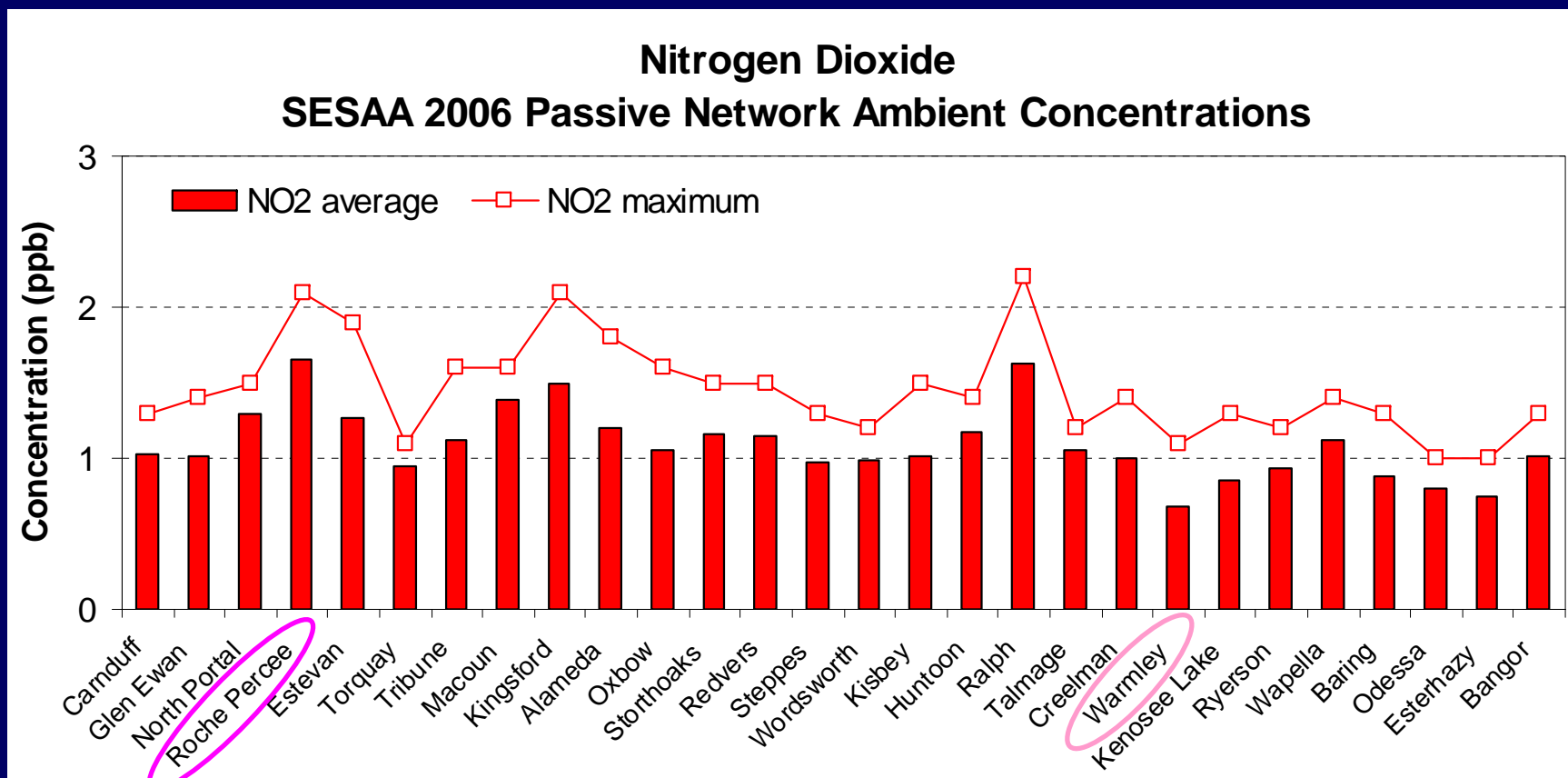


SO₂ Temporal Variation (Jun-Dec 2006)



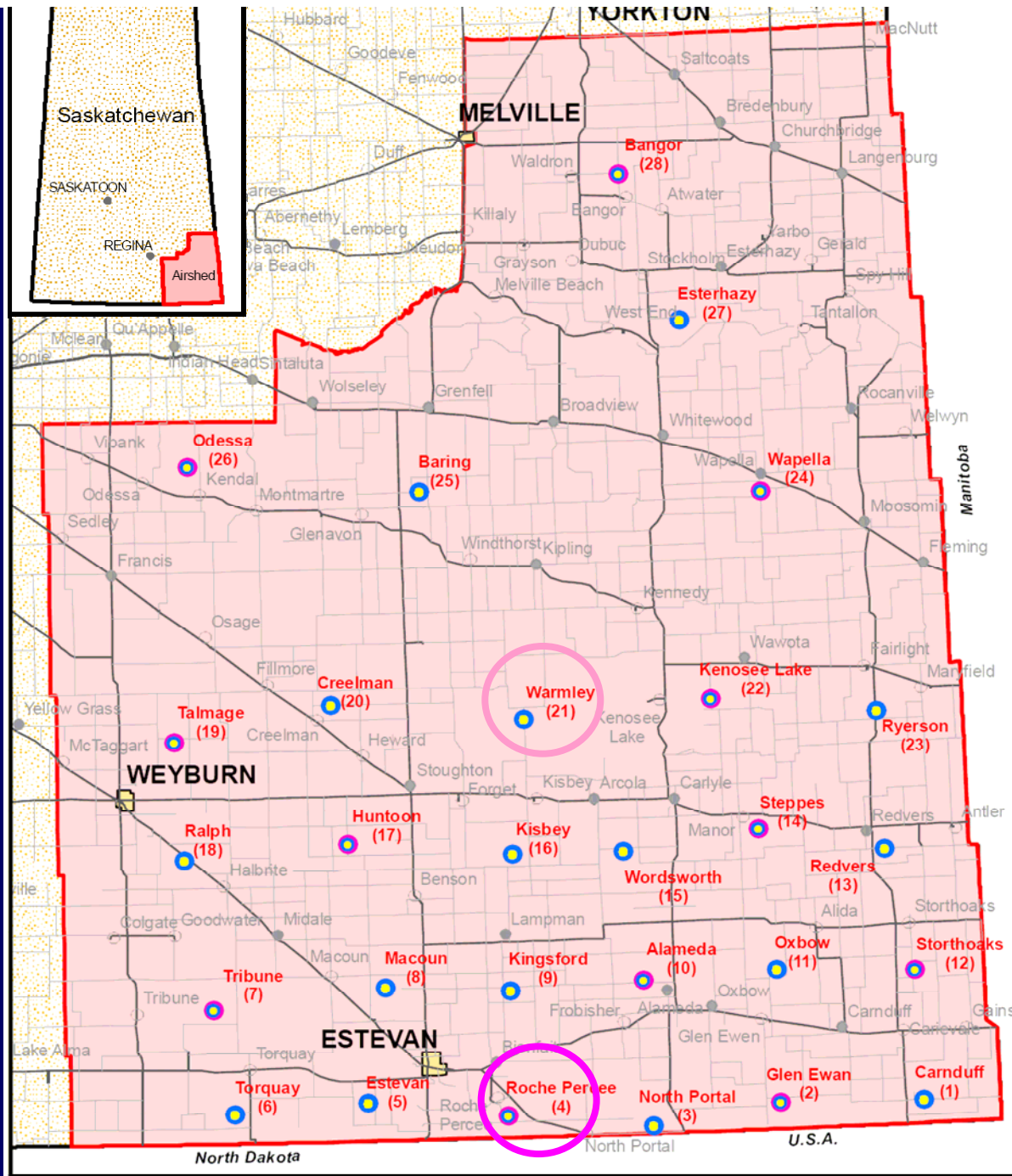
- slight increase in winter months

NO₂ Average and Maximum Concentrations (Jun-Dec 2006)



- Average NO₂ concentration of the entire network ~ 1.1 ppb
- Maximum NO₂ concentration of the entire network ~ 2.2 ppb
- Concentrations are below the Saskatchewan annual standard ~ 53 ppb

NO₂

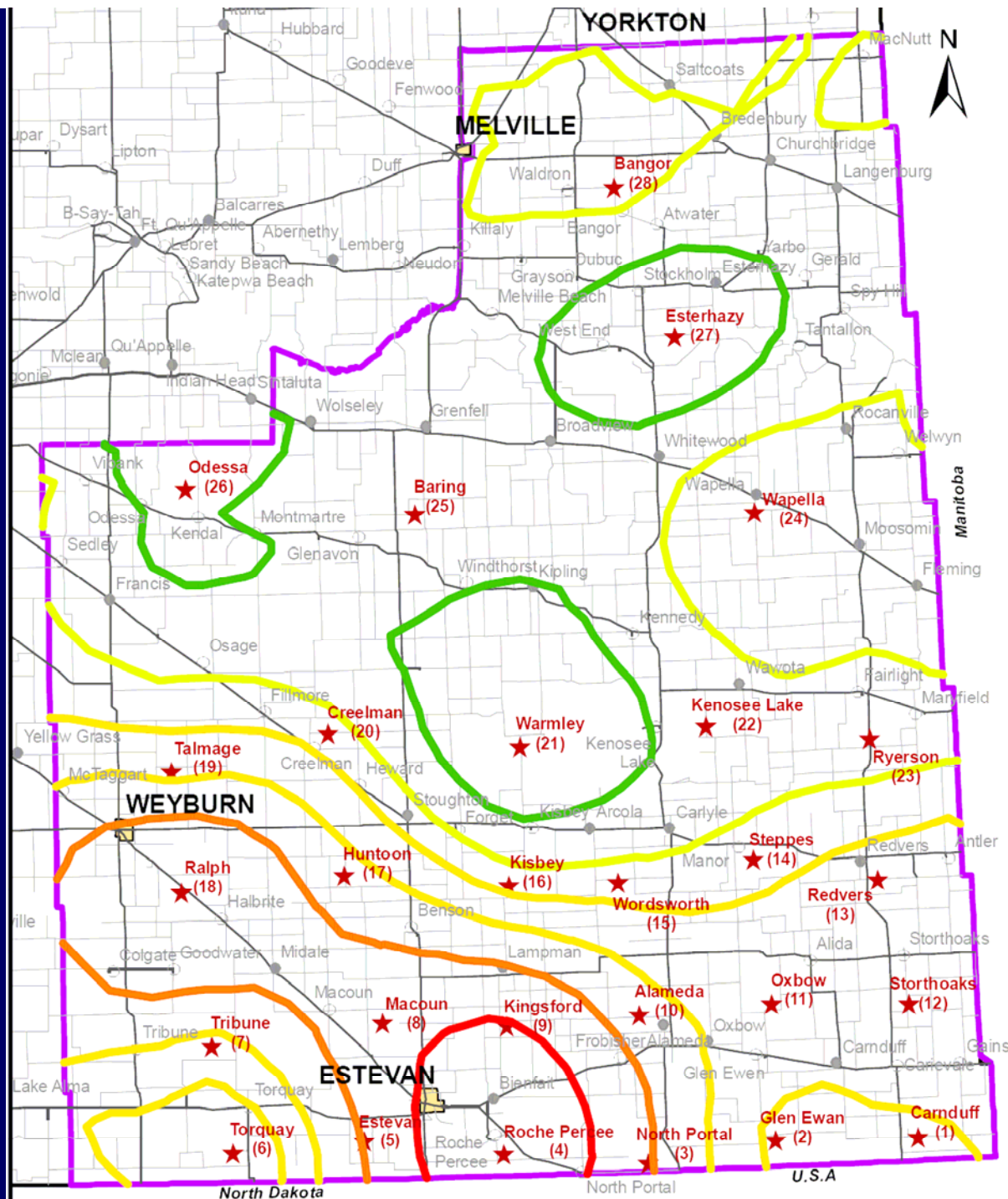
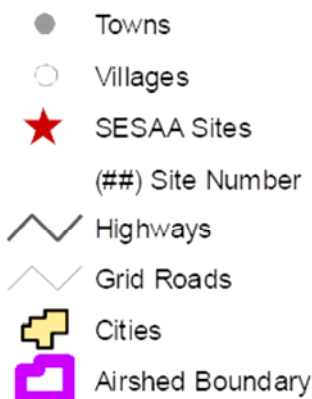


NO₂ Spatial Distribution (Jun-Dec 2006)

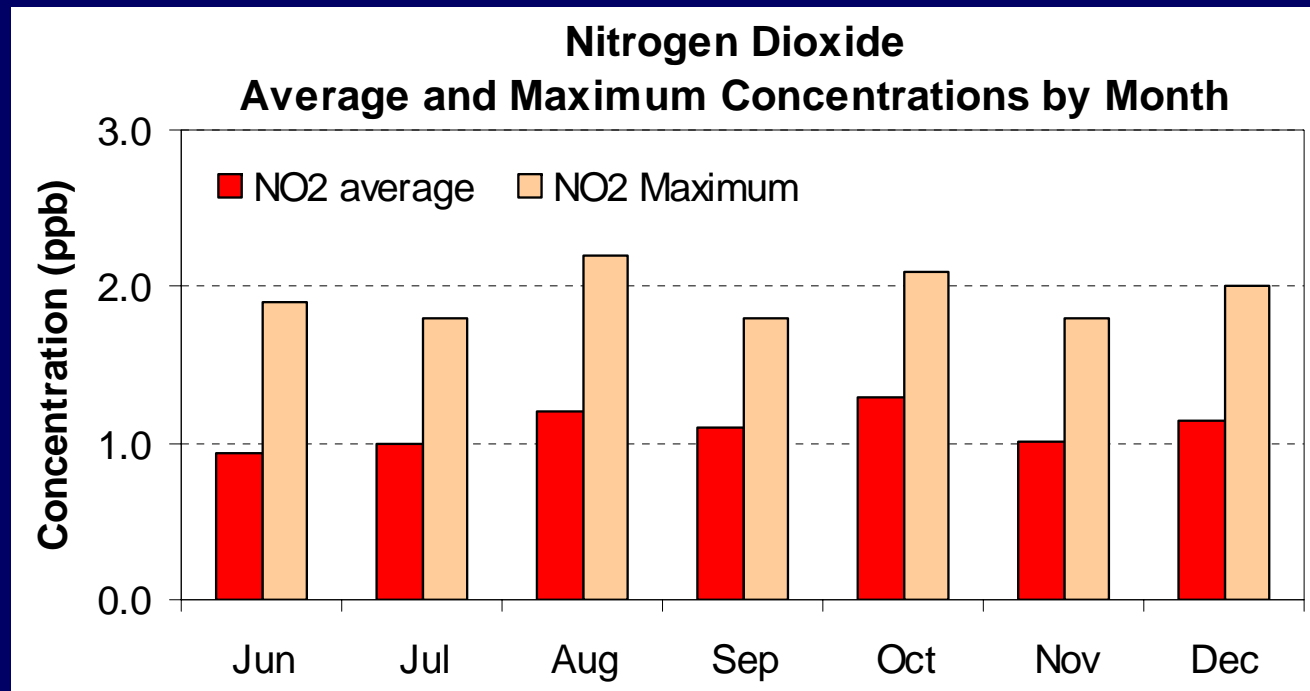
Almost similar distribution like SO₂

Legend

NO₂ Concentration

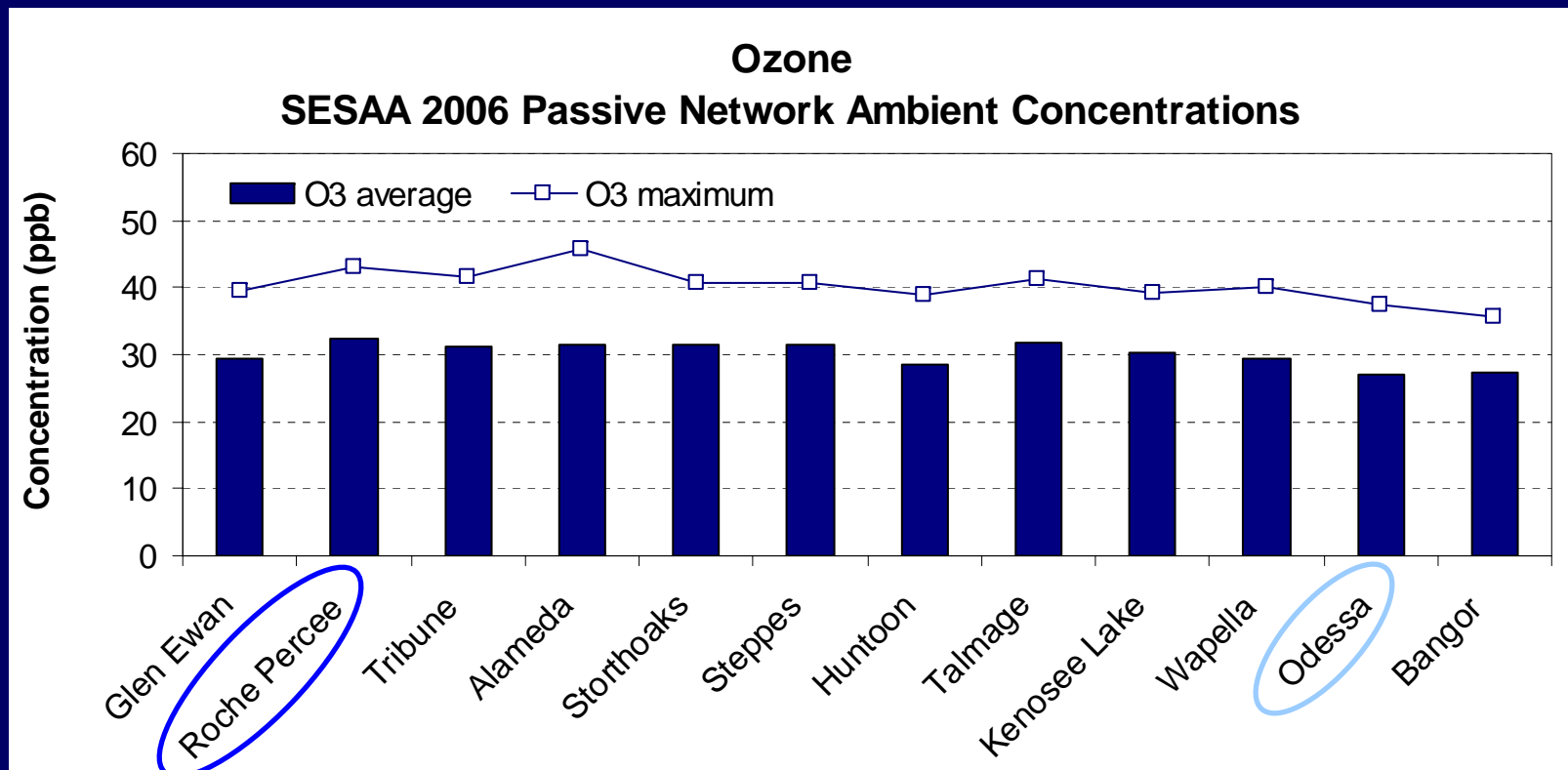


NO₂ Temporal Variation (Jun-Dec 2006)



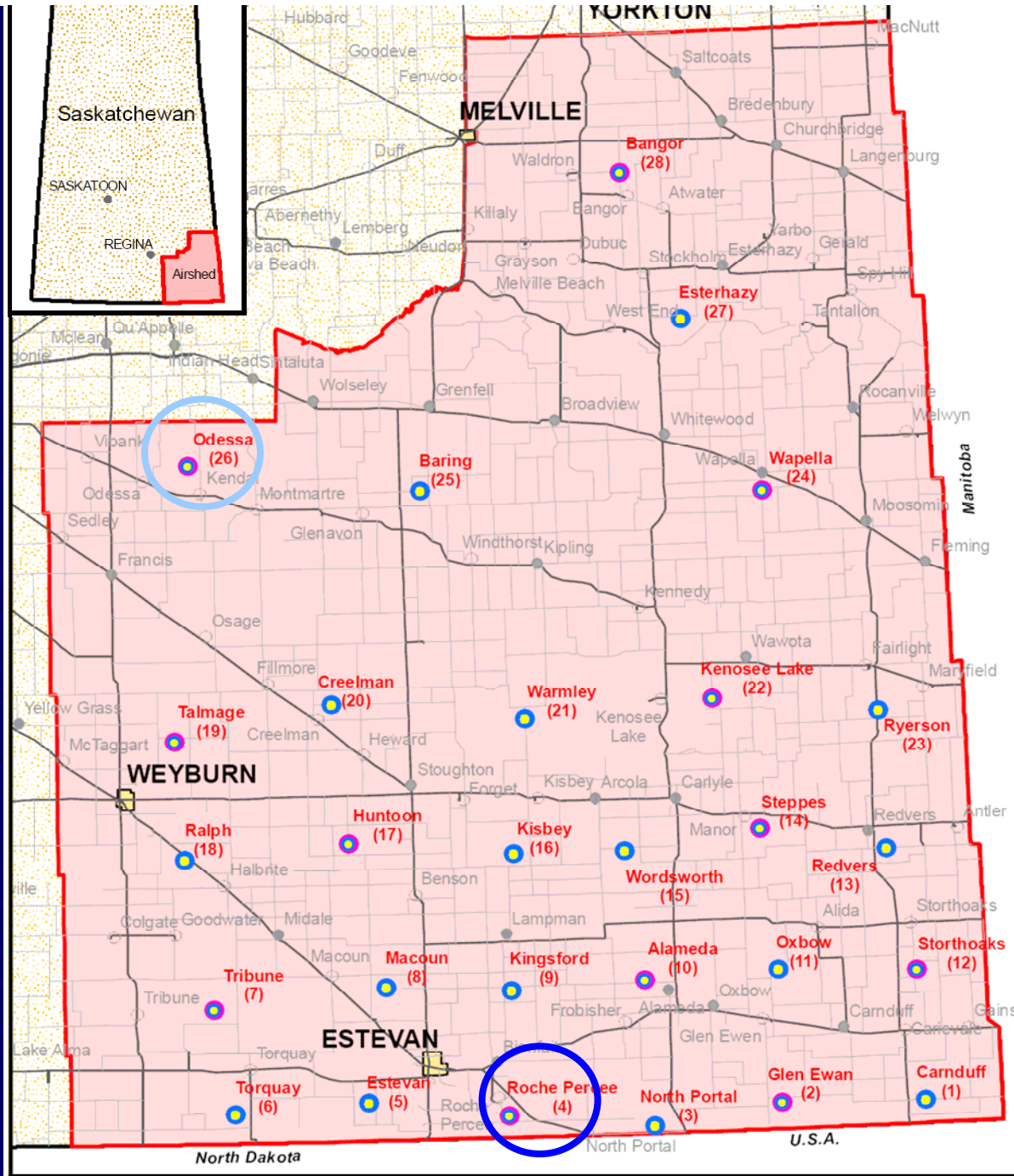
- No trend with time

O₃ Average and Maximum Concentrations (Jun-Dec 2006)



- Average O₃ concentration of the entire network ~ 30 ppb
- Maximum O₃ concentration of the entire network ~ 46 ppb
- Concentrations are below the ozone CWS ~ 65 ppb

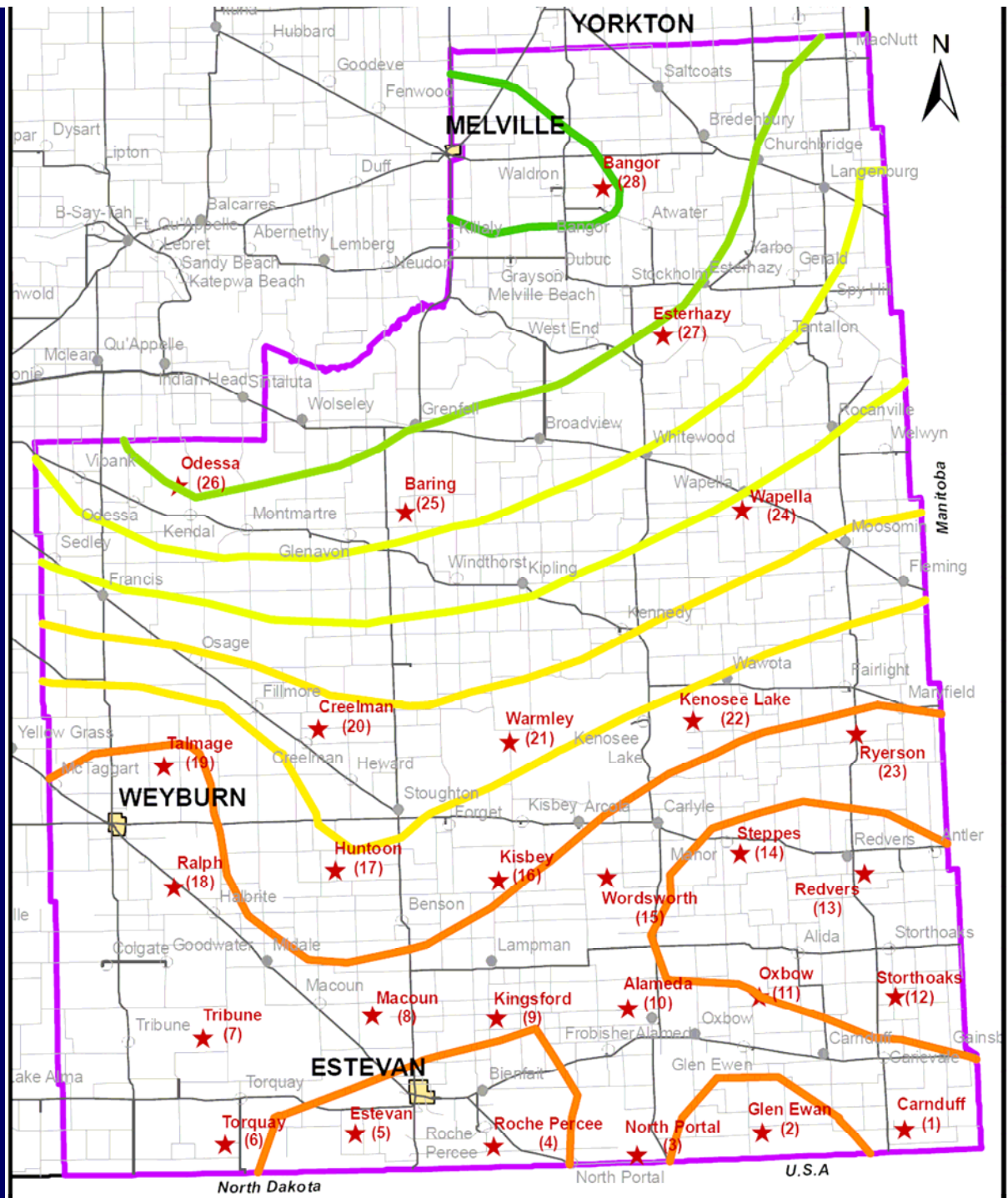
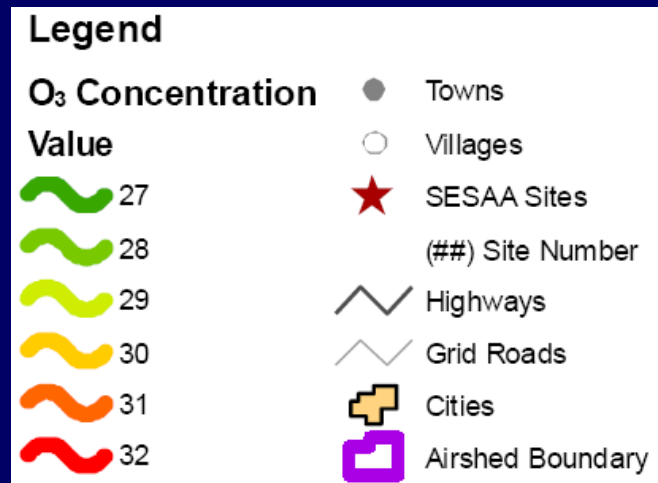
O₃



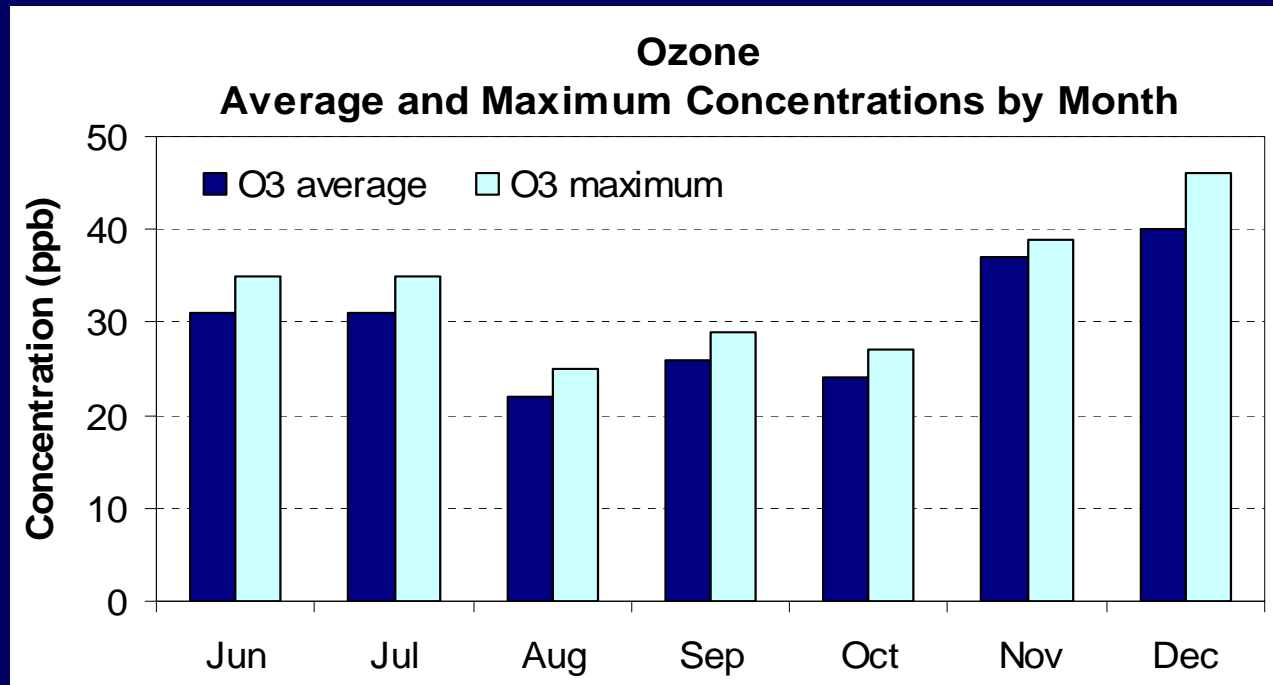
O₃ Spatial Distribution (Jun-Dec 2006)

Higher concentration in the south

Lower concentration in the north



O₃ Temporal Variation (Jun-Dec 2006)



- Unconventionally, higher ozone observed in winter than in summer?
- In Nov/Dec 2006, mean temperature ranged between 0 and –15 °C
- This may reflect impact of ozone transport from stratosphere

4. Summary

- Saskatchewan's first airshed was established (2005)
- Passive air monitoring was conducted (2006)
- Measured concentrations were below the standards
- SESAA website was launched (www.sesaa.ca)

5. Next Steps

- Initiation of continuous air monitoring in the airshed
- Public reporting of air quality information via web
- Development of other airsheds in Saskatchewan

Thank you!
