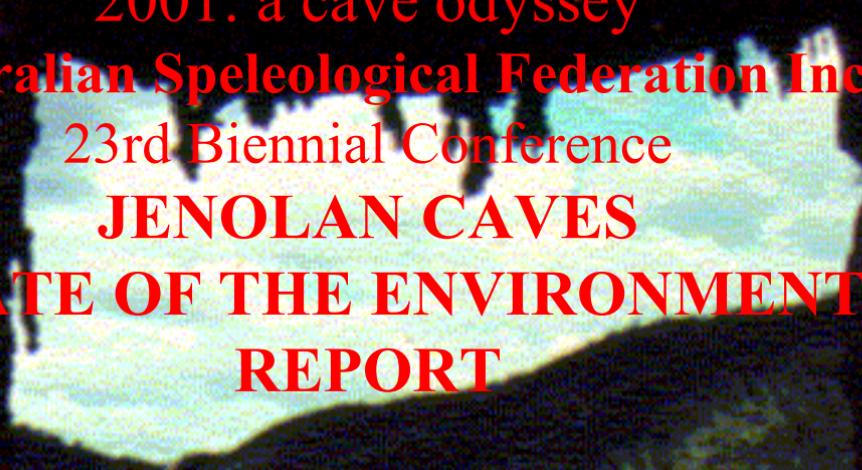


**2001: a cave odyssey**  
**Australian Speleological Federation Inc**  
**23rd Biennial Conference**  
**JENOLAN CAVES**  
**STATE OF THE ENVIRONMENT**  
**REPORT**

**Andy Spate**

**Chair: Social & Environmental Monitoring Committee**

- **What is SEM & Why is it there?**
- **Who is involved?**
- **What has SEM done?**
- **The social environment**
- **The surface environment**
- **The cave environment**
  - **“Show” caves**
  - **“Wild” caves**
- **Where to from here?**



2001: a cave odyssey  
Australian Speleological Federation Inc  
23rd Biennial Conference  
**JENOLAN CAVES**  
**STATE OF THE ENVIRONMENT**  
**REPORT**

## **WHAT IS SEM & WHY IS IT THERE? -1**

- The SEM Committee was formed in 1996 to provide independent expert advice to the Trust on the State of the Environment at Jenolan.
- TERMS OF REFERENCE
  - The Committee should provide independent advice to the Jenolan Caves Reserve Trust on the State of the Environment and the Visitor Impact Monitoring Program. This advice may include budgetary recommendations.
  - The Committee will prepare an annual State of the Environment Report in conjunction with the Karst Resources Manager.

2001: a cave odyssey  
Australian Speleological Federation Inc  
23rd Biennial Conference  
**JENOLAN CAVES**  
**STATE OF THE ENVIRONMENT**  
**REPORT**

## **WHAT IS SEM & WHY IS IT THERE? -2**

### TERMS OF REFERENCE continued

- The Committee will make recommendations to the Trust and guide the Karst Resources Manager on all matters relating to the Social and Environmental Monitoring program including:
  - Monitoring protocols
  - What to monitor
  - Methods and equipment
  - Personnel and resources
  - Analysis of data (information)
  - Any other relevant matters

**2001: a cave odyssey**  
**Australian Speleological Federation Inc**  
**23rd Biennial Conference**  
**JENOLAN CAVES**  
**STATE OF THE ENVIRONMENT**  
**REPORT**

• **WHO IS INVOLVED?**

- Chairman: **Andy Spate**, NSW National Parks and Wildlife Service, Queanbeyan
- Prof **Elery Hamilton-Smith**, Rethink Consulting, Melbourne (former Chairman)
- **Bruce Gall**, Environmental Consultant, Canberra
- Prof **David Gillieson**, James Cook University, Cairns
- Dr **Grant Hose**, NSW Dept of Land and Water Conservation, Sydney
- Dr **Neil Lipscombe**, Charles Sturt University
- Dr **Ruth Lyons**, University of Auckland, New Zealand
- **Peter Valentine**, James Cook University, Townsville
- **David Smith**, Wombeyan Caves, Staff Representative
- Dr **Julia James** (now retired from SEM)

2001: a cave odyssey  
Australian Speleological Federation Inc  
23rd Biennial Conference  
**JENOLAN CAVES**  
**STATE OF THE ENVIRONMENT**  
**REPORT**

## **WHAT HAS SEM DONE? - 1**

### **– Publications/reports**

- *Table of SEM Achievements to December 1999.* (Thurgate & Hamilton-Smith, 2000)
- Two *State of the Environment Reports* included in the Trust's Annual Report, one "in press"
- *An Environmental Risk Management Assessment for Jenolan Caves Reserve* (Gall, 2000)
- *The Social and Environmental Monitoring Program at Jenolan Caves* (Hamilton-Smith and Ramsay, 1998). (nomination to the Australasian Evaluation Society 1998 Awards for Public Sector Evaluation - Received a Certificate of Commendation for Methodology in Public Sector Evaluation)
- SEM Information Sheets
- Assistance to Karst Resources Department with *Karst Out*

**2001: a cave odyssey**  
**Australian Speleological Federation Inc**  
**23rd Biennial Conference**  
**JENOLAN CAVES**  
**STATE OF THE ENVIRONMENT**  
**REPORT**

**WHAT HAS SEM DONE? - 2**

**– Workshops**

- **Environmental Risk Assessment/Threatening Process Identification workshops (3)**
- **SEM Review Workshop (May 1999)**

**– Key Environmental Indicators**

- **Large array of indicators established by Manidis Roberts 1995 Report**
  - **Further indicators have been investigated by SEM especially through:**
    - **the Risk Management Assessment Report**
    - **State of Environment Reports**
    - **working papers and research proposals**
- **Some indicators have been investigated and found to be not of concern**

**– Advice on many matters**

**2001: a cave odyssey**  
**Australian Speleological Federation Inc**  
**23rd Biennial Conference**  
**JENOLAN CAVES**  
**STATE OF THE ENVIRONMENT**  
**REPORT**

**THE SOCIAL ENVIRONMENT**

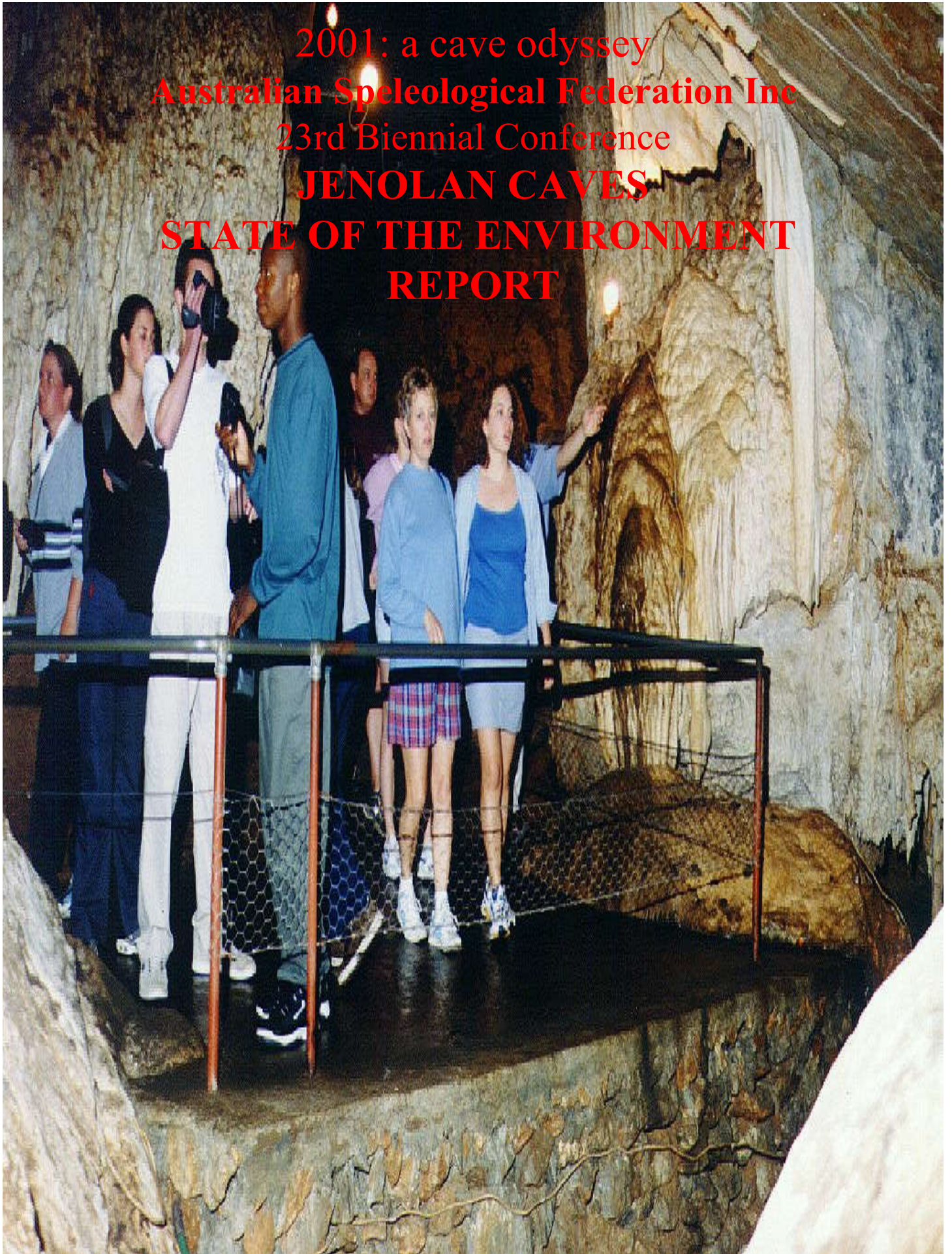
**Issues investigated include:**

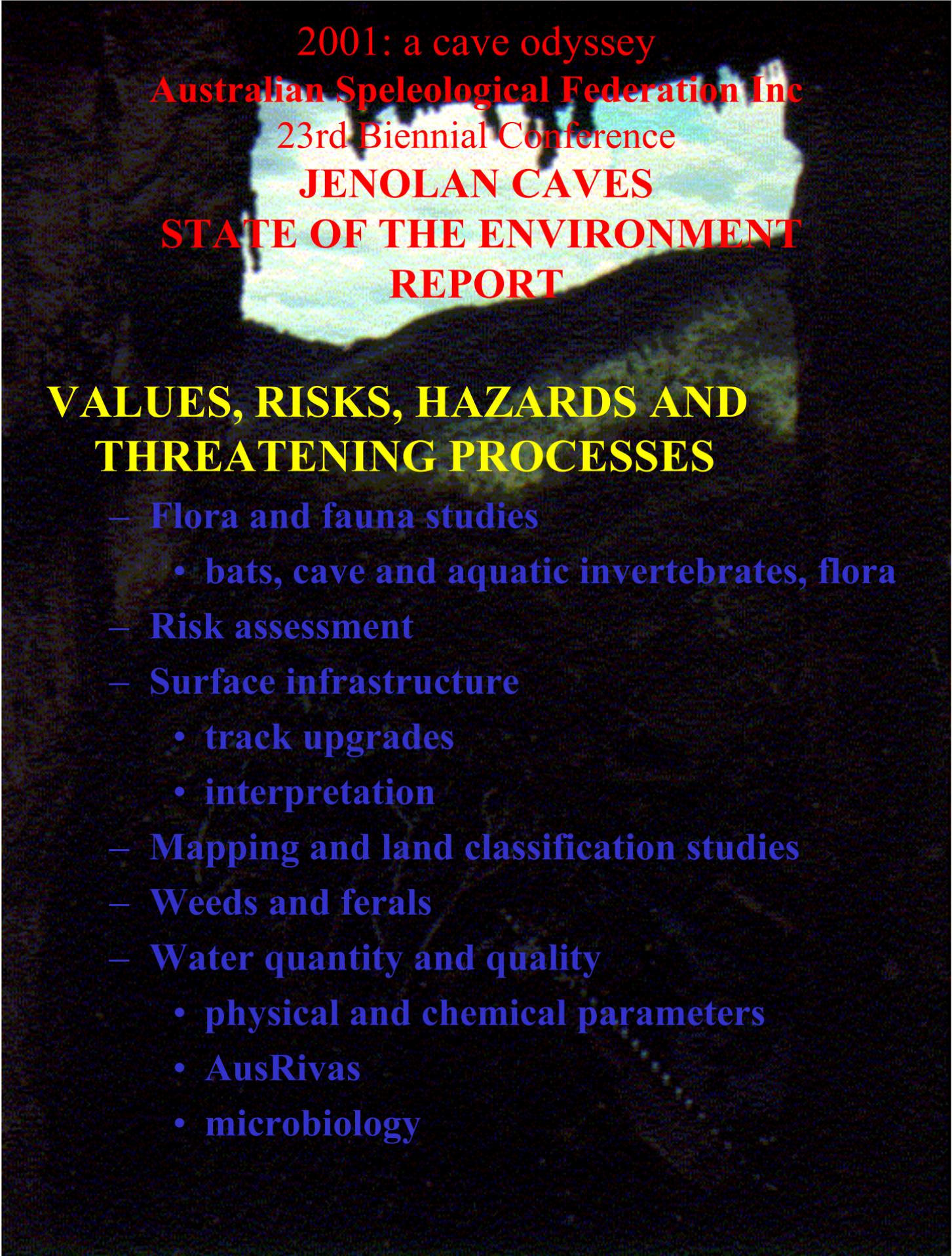
- Visitor experiences
- Visitor attitudes
- Demographics
- Dissatisfaction factors
  - Crowding
  - lack of support for non-English speakers
  - food
  - other visitor services
  - lack of information on surface activities  
(and perhaps such activities generally)
- More studies/surveys to come
  - SPIRT grant - PhD project

**2001: a cave odyssey**  
**Australian Speleological Federation Inc**  
**23rd Biennial Conference**  
**JENOLAN CAVES**  
**STATE OF THE ENVIRONMENT**  
**REPORT**



**2001: a cave odyssey**  
**Australian Speleological Federation Inc**  
**23rd Biennial Conference**  
**JENOLAN CAVES**  
**STATE OF THE ENVIRONMENT**  
**REPORT**





**2001: a cave odyssey**  
**Australian Speleological Federation Inc**  
**23rd Biennial Conference**  
**JENOLAN CAVES**  
**STATE OF THE ENVIRONMENT**  
**REPORT**

**VALUES, RISKS, HAZARDS AND  
THREATENING PROCESSES**

- **Flora and fauna studies**
  - **bats, cave and aquatic invertebrates, flora**
- **Risk assessment**
- **Surface infrastructure**
  - **track upgrades**
  - **interpretation**
- **Mapping and land classification studies**
- **Weeds and ferals**
- **Water quantity and quality**
  - **physical and chemical parameters**
  - **AusRivas**
  - **microbiology**

**2001: a cave odyssey**  
**Australian Speleological Federation Inc**  
**23rd Biennial Conference**  
**JENOLAN CAVES**  
**STATE OF THE ENVIRONMENT**  
**REPORT**

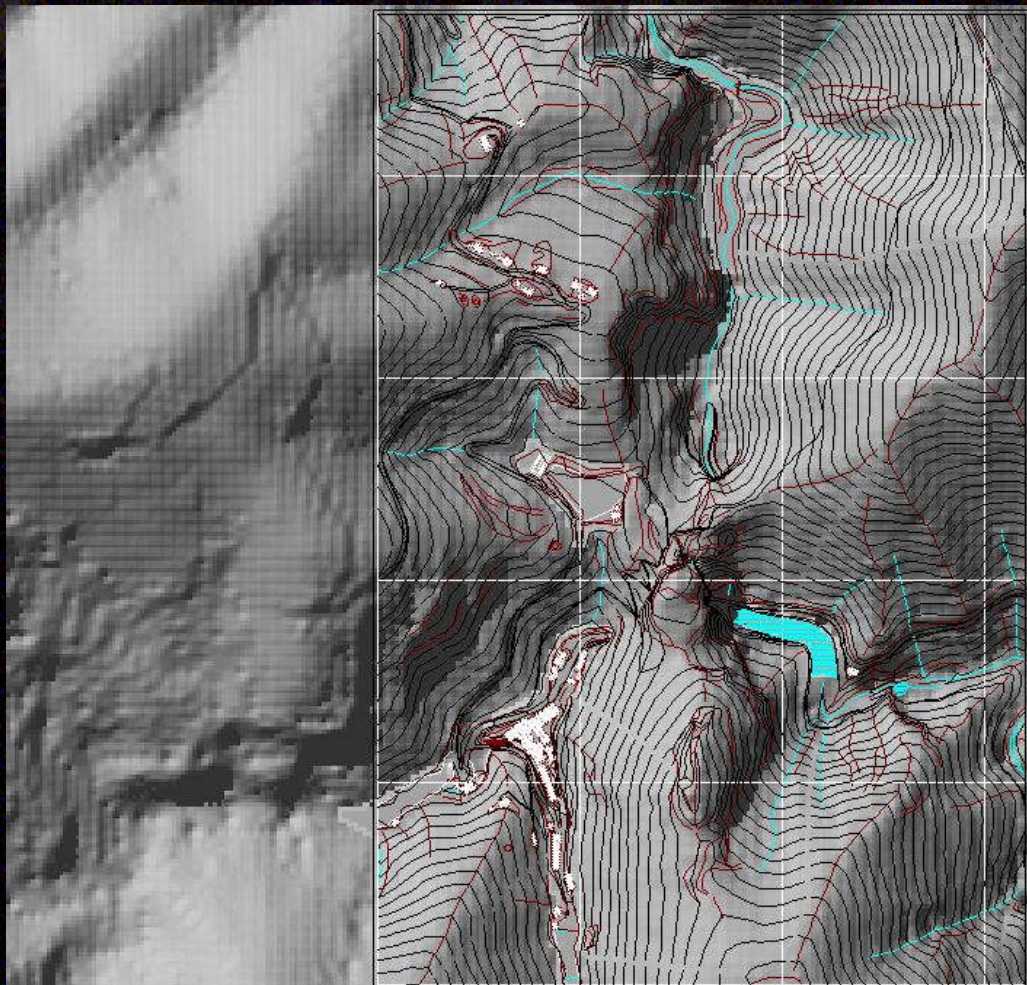
## **THE SURFACE ENVIRONMENT**

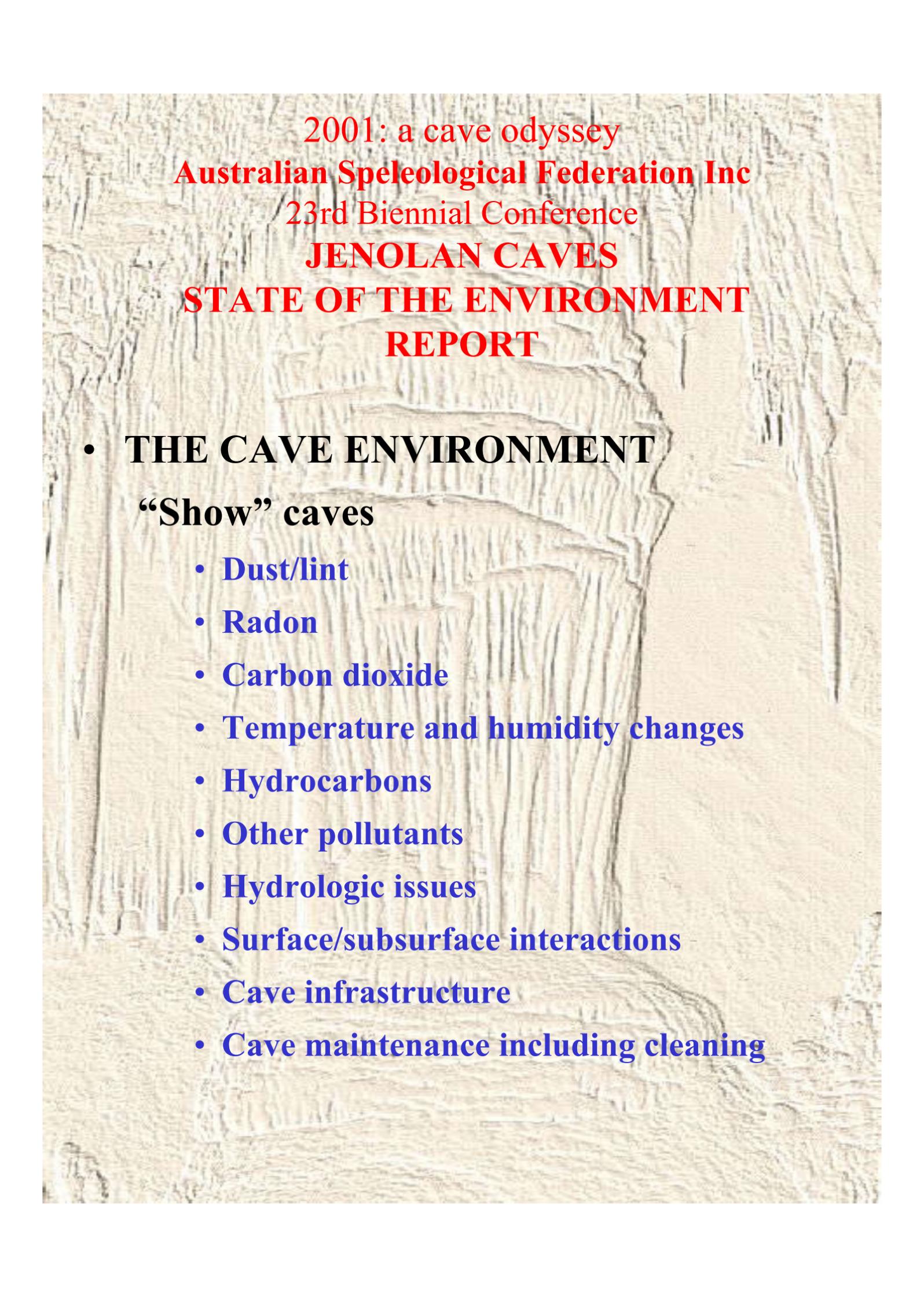
- Airborne multispectral video image of the area from Number 2 Carpark to Playing Fields area. Higher intensities of red indicate healthy eucalypt canopies. Original image resolution is one metre.



**2001: a cave odyssey**  
**Australian Speleological Federation Inc**  
**23rd Biennial Conference**  
**JENOLAN CAVES**  
**STATE OF THE ENVIRONMENT**  
**REPORT**

- **Section of the detailed 5 metre Digital Elevation Model for Jenolan Cave with partly overlain infrastructure. Synthetic hillshading model used to simulate afternoon light.**





**2001: a cave odyssey**  
**Australian Speleological Federation Inc**  
**23rd Biennial Conference**  
**JENOLAN CAVES**  
**STATE OF THE ENVIRONMENT**  
**REPORT**

- **THE CAVE ENVIRONMENT**

- **“Show” caves**

- **Dust/lint**
    - **Radon**
    - **Carbon dioxide**
    - **Temperature and humidity changes**
    - **Hydrocarbons**
    - **Other pollutants**
    - **Hydrologic issues**
    - **Surface/subsurface interactions**
    - **Cave infrastructure**
    - **Cave maintenance including cleaning**

# 2001: a cave odyssey

## Australian Speleological Federation Inc

### 23rd Biennial Conference

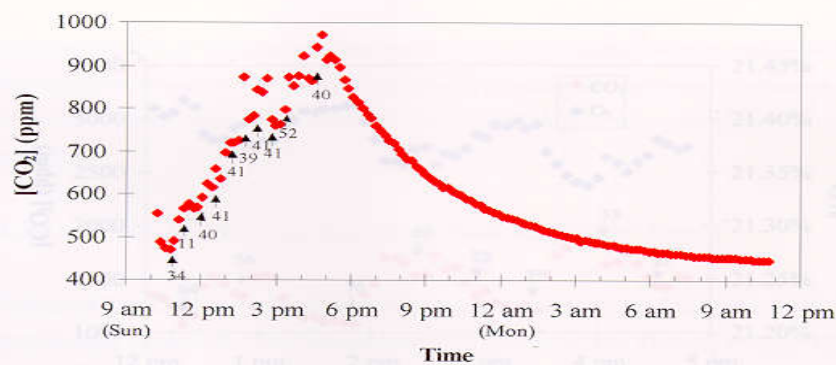
## JENOLAN CAVES

## STATE OF THE ENVIRONMENT

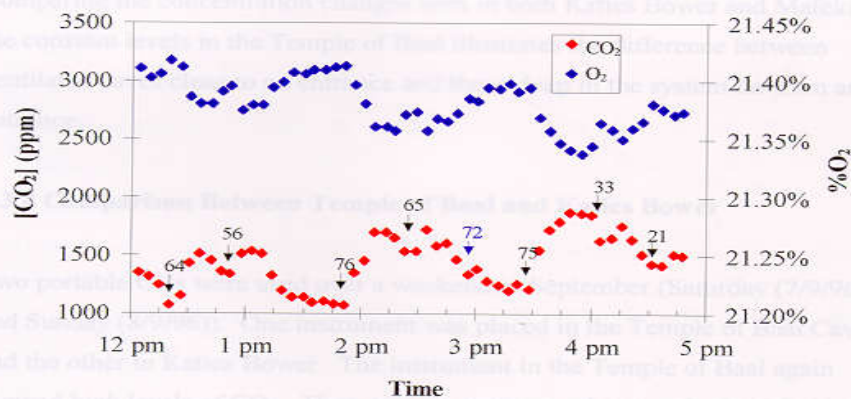
## REPORT

### • THE CAVE ENVIRONMENT

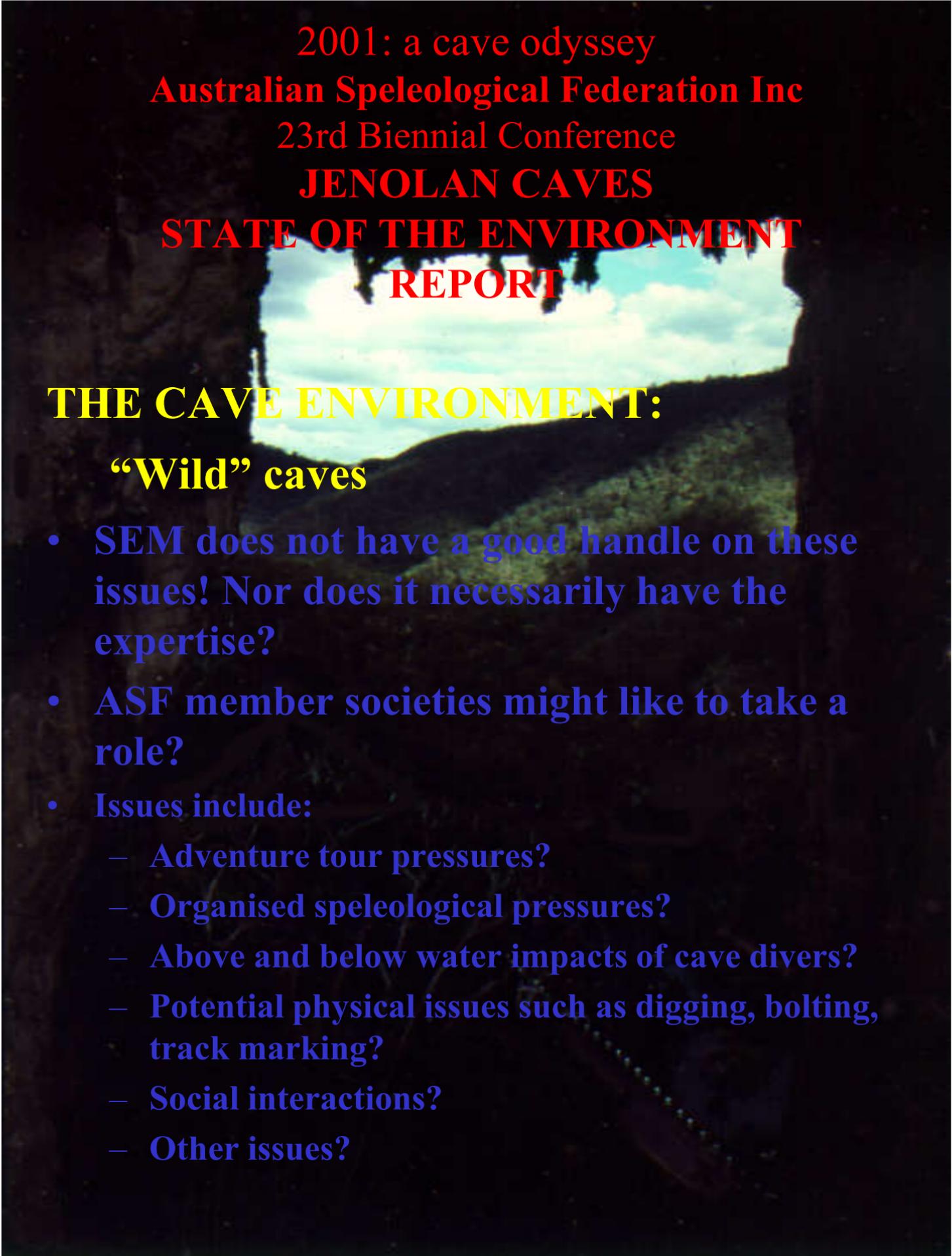
Carbon dioxide and tourist visits: June long weekend 1996  
(Cooper 1996)



**Figure 3.7:** CO<sub>2</sub> concentration over time in Katies Bower for Sunday to Monday morning of the holiday weekend.



**Fig 3.8:** CO<sub>2</sub> and O<sub>2</sub> concentration over time in Mafeking Cave for Monday afternoon of the holiday weekend.

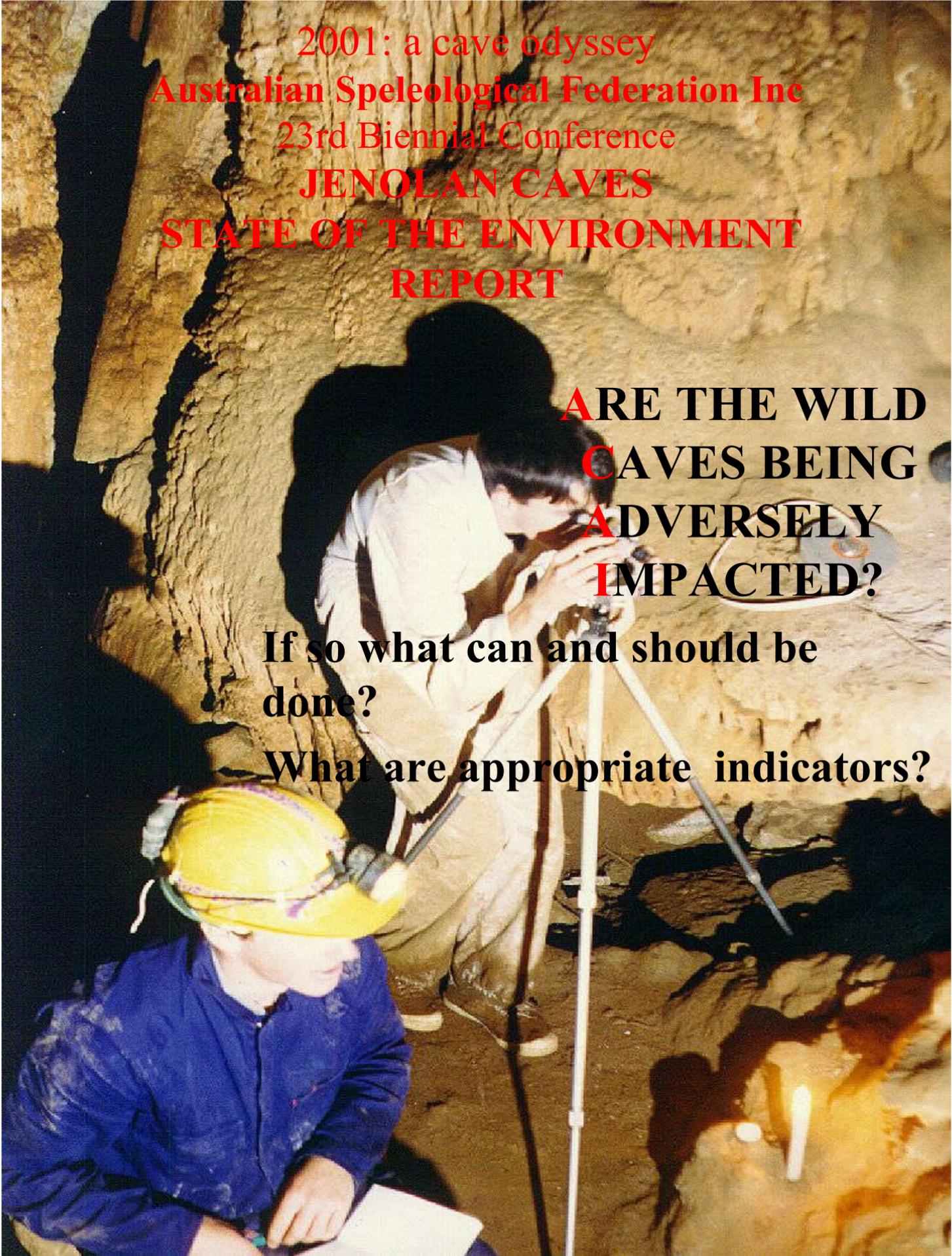


**2001: a cave odyssey**  
**Australian Speleological Federation Inc**  
**23rd Biennial Conference**  
**JENOLAN CAVES**  
**STATE OF THE ENVIRONMENT**  
**REPORT**

**THE CAVE ENVIRONMENT:**

**“Wild” caves**

- SEM does not have a good handle on these issues! Nor does it necessarily have the expertise?
- ASF member societies might like to take a role?
- Issues include:
  - Adventure tour pressures?
  - Organised speleological pressures?
  - Above and below water impacts of cave divers?
  - Potential physical issues such as digging, bolting, track marking?
  - Social interactions?
  - Other issues?

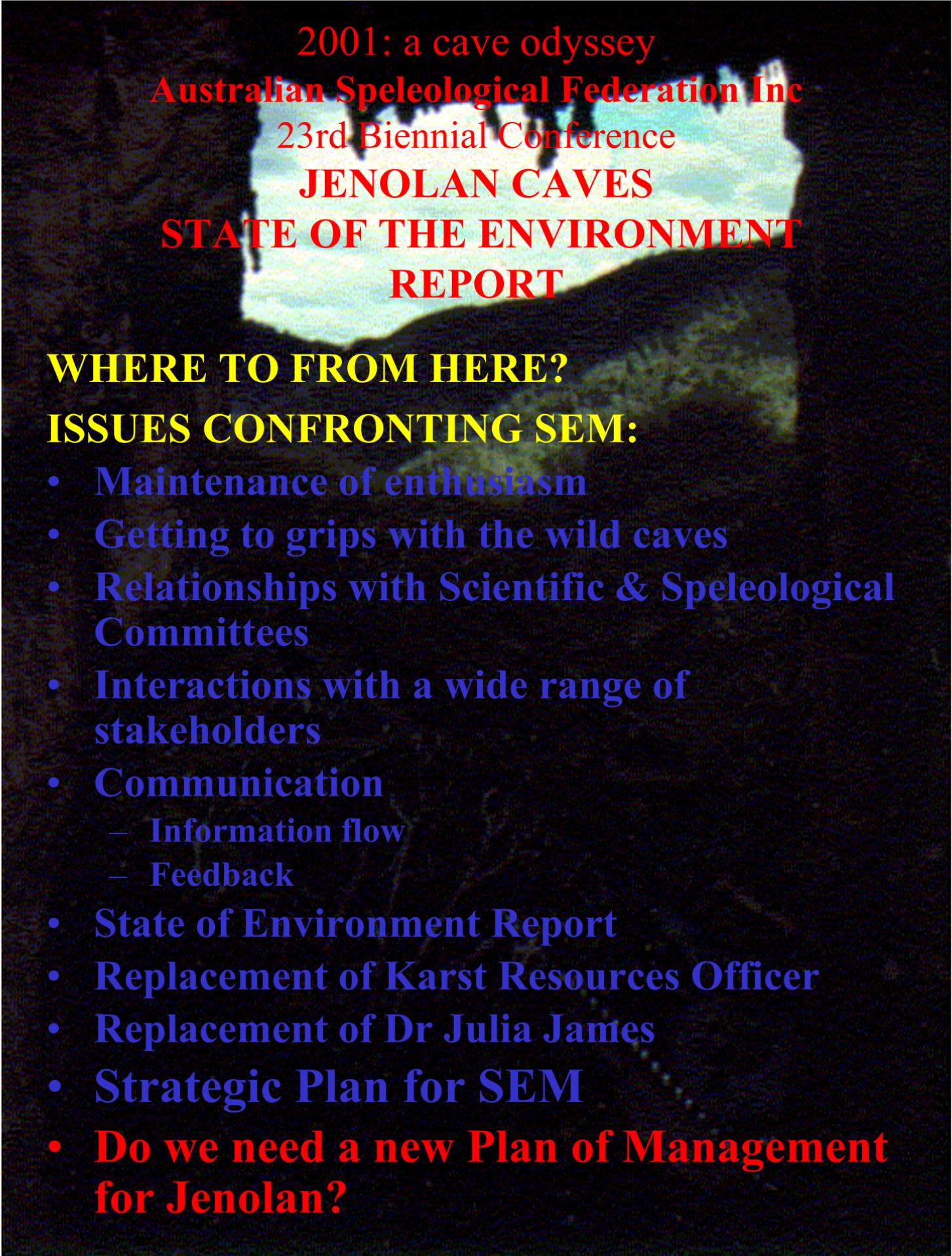


2001: a cave odyssey  
Australian Speleological Federation Inc  
23rd Biennial Conference  
**JENOLAN CAVES**  
**STATE OF THE ENVIRONMENT**  
**REPORT**

**ARE THE WILD  
CAVES BEING  
ADVERSELY  
IMPACTED?**

**If so what can and should be  
done?**

**What are appropriate indicators?**



**2001: a cave odyssey**  
**Australian Speleological Federation Inc**  
**23rd Biennial Conference**  
**JENOLAN CAVES**  
**STATE OF THE ENVIRONMENT**  
**REPORT**

**WHERE TO FROM HERE?**

**ISSUES CONFRONTING SEM:**

- **Maintenance of enthusiasm**
- **Getting to grips with the wild caves**
- **Relationships with Scientific & Speleological Committees**
- **Interactions with a wide range of stakeholders**
- **Communication**
  - **Information flow**
  - **Feedback**
- **State of Environment Report**
- **Replacement of Karst Resources Officer**
- **Replacement of Dr Julia James**
- **Strategic Plan for SEM**
- **Do we need a new Plan of Management for Jenolan?**

2001: a cave odyssey  
Australian Speleological Federation Inc  
23rd Biennial Conference  
**JENOLAN CAVES**  
**STATE OF THE ENVIRONMENT**  
**REPORT**

- **Do we need a new Plan of Management for Jenolan? YES**
  - SEM believes that this is well overdue
  - SEM will be pushing for this to be done
  - Why?
    - New legislation and administrative arrangements in place for some time
    - Old plan considerably out of date
    - Many issues better understood
    - Community attitudes may have changed
    - The ways in which Jenolan is used have changed
  - SEM hopes for substantive, constructive input from the organised caving community
  - However, it will not be a SEM-based process.